The following are abstracts of original research for APhA2020, which was to be held March 19-23, 2020 in Washington DC. The 2019 abstracts are grouped into the following themes to better facilitate review by specific topic or interest area: Adherence and Persistence; Cardiovascular Care; Care of Underserved; Collaborative Practice; Communication/Patient Education; Compounding; Diabetes; Educating the Educators; Emerging Topics; Geriatrics and Long-Term Care; Health Disparities and Cultural Issues; Health Literacy; HIV and Acquired Immunodeficiency Syndrome; Immunizations; Laws and Regulations; Marketing and Management; Maternal, Child, and Women's Health; Medication Therapy Management; Medication Reconciliation; Mental Health; Nuclear Pharmacy; OTC, Self-Care, and CAM; Pain Management; Patient Attitudes and Behavior; Patient Care Services; Personalized Medicine/Pharmacogenomics; Pharmacist Behaviors and Attitudes; Pharmacoeconomics and Outcomes; Professional Development; Public Health; Quality and Safety; Reimbursement; Respiratory Care; Specialty Pharmacy, Substance Abuse and Addictions; Technology; Transitions of Care; and Workforce and Manpower.

Inquiries specific to the research should be directed to the presenting author. The presenting author e-mail address given. Presenting author is indicated in the abstracts by underlined name.

Adherence and Persistence

1-Community Pharmacist-Led Patient Outreach Intervention for Persons with Diabetes and not on a Statin in a Medically-Underserved Area. Biskach E, David T, Dang Y, University of Maryland Eastern Shore, Twigg G, Apple Discount Drugs. Email: epbiskach@umes.edu

Objective: Patients with diabetes mellitus (DM) have a greater incidence of lipid abnormalities, which results in an increased risk of atherosclerotic cardiovascular disease (ASCVD). HMG-CoA reductase inhibitors, also known as statins, are the drug of choice for low-density lipoproteins (LDL) cholesterol lowering and cardioprotection. Current guidelines recommend that all patients diagnosed with diabetes be on statin therapy. Centers of Medicare and Medicaid Services created Star Ratings to indicate the quality of Medicare plans on a scale of 1 to 5 stars, with 5 stars being the highest rating. Pharmacy Quality Alliance endorsed a new quality metric designed to improve cardiovascular outcomes for persons with diabetes. Statin use in persons with diabetes (SUPD) metric assesses the percentage of individuals aged 40 to 75 years with prescription claims for diabetes medications and a statin medication. Pharmacist-led interventions have shown to be successful in educating patients and increasing patient's interest in initiating statin therapy. However, the effectiveness of pharmacist-based interventions seem to be limited by low response rates of prescribers. The primary objective is to determine the factors for lack of statin usage in patients with diabetes who qualify for statin therapy based on the 2019 Standards of Medical Care in Diabetes guidelines. The participating local community pharmacy is located in a rural area of low socioeconomic status, limited transportation and a limited number of providers. The participating pharmacies provide medication therapy management (MTM) services and is an accredited diabetes center through the American Association of Diabetes Education (AADE). Through these services and patient engagement software programs, pharmacists can monitor adherence and effectiveness of diabetes regimens, including SUPD.

Methods: A 26-item questionnaire will be conducted for eligible patients at 4 community pharmacies in a medically underserved area. Patients currently on any medications for diabetes and aged 40-75 years identified by a patient engagement software program, and have not taken a statin within the past 6 months will be recruited. Patients who do not speak English, who do not possess a phone or do not have a phone number or address on record, and/or a minimum of three failed attempts for contact by the pharmacy will be excluded. Eligible patients will be contacted via telephone to complete a questionnaire about their medical history and knowledge of statins. The survey will include questions about demographic information, financial barriers, current medications and supplements, previous statin therapy, knowledge of statin therapy, comorbid conditions that affect ASCVD risk, and interest in initiating statin medications. Based on eligibility, the researcher will contact the patient's provider for initiation of statin usage if they qualify. The primary endpoint is to determine the factors for lack of statin therapy in eligible patients with diabetes. Secondary endpoints are to determine patients' baseline knowledge of statin therapy, to determine factors to improve patients' adherence rates to statins, and to determine prescribers' willingness to prescribe statin therapy. The study will be submitted to the Institutional Review Board for approval.

Results: Currently in the process of recruiting patients.

Conclusion: To be determined.

2-Prescription Return Trends in Two Ohio Community Pharmacies. Conrad J, Beavers L, University of Findlay. Email: conradj@findlay.edu

Objective: The purpose of this study is to analyze and categorize the classes of medications that are not being picked up, and identify causes underlying prescription abandonment. The second objective is to see what effect CVS implementation of patient care calls in 2015 has had on prescription abandonment..

Methods: This study is a retrospective, cross-sectional analysis using data from two CVS pharmacies' in Ohio Return To Stock (RTS) lists. Utilizing paper lists of returned prescriptions from the two pharmacies, we compiled two lists comprised of 5,501 prescriptions in a Microsoft Excel document. From these lists, we analyzed the trends in return among medication class, price, and whether the prescription was new or refilled. The prescriptions were all returned-to-stock based on the criteria f or return set by the CVS pharmacies. Prescriptions for over-the-counter medications were excluded because they could not be accurately categorized and the prices were often outliers due to a lack of coverage from third parties. Prescriptions for devices such as diabetic testing supplies and inhalers could also not be accurately categorized, but were still included in a miscellaneous category because they are important for patient adherence data.

Preliminary Results: Preliminary analysis of 1000 prescriptions up to this point from each location gives some interesting insights. Excluding the miscellaneous category, the highest rates of abandonment by drug class for both pharmacies were antidepressants with 142 per 1000 prescriptions (14.2%) and 155 per 1000 prescriptions (15.5%) at the Findlay and Athens locations respectively. Among the lowest rates for both pharmacies were antifungal medication with 1% and 1.5% respectively, anticoagulants with 0.6% and 0.9% respectively, and anti-parkinsonism medications with 0.7% and 0.9% respectively. Results regarding trends in price and geographic location, as well as effect of CVS's implementation of 'patient care calls' are still pending.

Conclusions/Implications: Pending upon completion of results.

3-A Follow-Up Study on Pharmacist-Led Discharge Medication Counseling and its Corresponding Impact on Medication Adherence and Hospital Readmission Rates. Cunningham S, Mercer University College of Pharmacy. Email: savannahbc18@gmail.com

Objective: The primary endpoint of this IRB-approved study seeks to analyze pharmacist involvement with discharge medication counseling and its effects on medication adherence rates within a 6 month period following discharge. The secondary endpoint seeks to analyze effects on hospital readmission rates within the same time period. Studies have found that participants who receive pharmacist-provided patient education at discharge have decreased hospital readmission rates versus participants who do not receive pharmacist-provided discharge counseling. Community pharmacists can contribute to improving adherence rates by participating in a bedside medication delivery program. These programs also contribute to lowering hospital readmission rates now that hospitals are penalized by certain payors if patients are readmitted within 30 days of discharge.

Method: The data collected will be analyzed via intervention (pharmacist and student pharmacist interns providing bedside counseling to patients being discharged) versus control (all patients of the hospital being discharged and receiving medication bedside delivery but no pharmacist-provided counseling). The data will include patients' multiple disease states, gender, and insurance coverage. Medication adherence will be measured through proportion of days covered (PDC). Informed consent will be provided to all participants regarding a follow-up telephone call or retrieval of medication records through the pharmacy electronic medication records system and hospital electronic medical records system. Approximately 10-15 minute counseling sessions will be performed at the time of discharge. Follow-up telephone calls or retrieval of medication records through the pharmacy and hospital electronic medical records system will be conducted for the intervention group at 6 months post-discharge. An eight-item Morisky medication adherence survey will be used as a model to discuss medication adherence and side effects experienced.

Results: This is a continuation of a pilot study by a former Community-Based Pharmacy Resident and a Summer Research Scholarship Student. In the first iteration of this study, there were 33 patients enrolled, while this continuation included a total of 81 patients. In this second iteration. there were 27 patients in the intervention arm and 54 patients in the control arm. Using the PDC equation, medication adherence rates of previously enrolled patients will be measured at an extended 6-month period. Pharmacist-led discharge medication counseling (intervention group) is expected to continue to make a statistically significant difference in medication adherence rates. Pharmacist-led discharge medication counseling is also expected to make a statistically and/or clinically significant difference in hospital readmission rates, as was previously seen in a previous iteration of this study.

Conclusions: Pharmacist involvement in a discharge medication delivery program is essential to achieve the goal of improving medication adherence in patients being discharged from the hospital. A PDC over 80% is required for optimal therapeutic efficacy, and results are expected to show that the intervention group will reach this threshold. It is further hypothesized that pharmacist-led discharge counseling will also reduce hospital readmission rates, thus significantly reducing healthcare costs and improving patient outcomes in the intervention group as compared to the control group.

4-Increased Utilization of Adherence Tools and its Impact on Proportions of Days Covered to Antiretroviral Therapy for Persons Living with HIV. Desai V, Riepenhoff R, Walgreen Co., Brown B, University of Cincinnati. Email: vaidehi.desai@walgreens.com.

Objective: The objective of this study is to determine if utilization of adherence tools such as automatic refill, medication synchronization, text message alerts, and 90 day refills impacts proportion of days covered (PDC) in persons living with HIV. PDC is a metric that utilizes prescription claims data to determine the proportion of days that a patient has medication on hand. While a PDC of ≥ 80% is considered adequate for most disease states, the threshold is higher for HIV with a PDC of ≥ 90% being indicative of adequate adherence. For patients on antiretroviral therapy, adequate adherence can reduce HIV viral load to undetectable levels resulting in decreased risks of morbidity, mortality, and transmission.

Methods: This study will be submitted to the Institutional Review Board at the University of Cincinnati for approval. All data will be maintained confidentially. Paired t-test will be used to analyze the data collected in this study. Eligible subjects must be adult patients on antiretroviral therapy for the treatment of HIV. The following data will be collected from the electronic medical record (EMR) at the beginning of the study: subject name, date of birth, address, phone number, medication list, baseline utilization of adherence tools, and PDC for antiretroviral therapy. Subjects will be contacted by the investigator via telephone for enrollment in additional adherence tools. Once all eligible subjects are enrolled, the subjects' medication refills will be monitored monthly through the EMR to determine continued utilization of adherence tools throughout the study period. The subjects will be studied for 6 months, at the end of which, PDC will be re-calculated and compared to baseline to determine whether there is an improvement.

Results: Research in Progress.

Conclusion: Research in Progress.

5-Impact of Medication Synchronization on the Proportion of Days Covered as a Measure of Medication Adherence in a Community Specialty Pharmacy. Edokpayi N, Steinberg J, Nova Southeastern University, Montealegre A, Gil J, Walgreen Co. Email: nosa.edokpayi@gmail.com

Background: Medication Synchronization (Med Sync) has been associated with increased patient medication adherence in a community pharmacy setting.1 However, it is unknown whether similar results will be replicated in HIV patients with comorbid chronic conditions treated for 6-months or more in a specialty pharmacy. In Florida, the statutes require insurance plans to cover medication synchronization services at least once during the insured year.2 Medication synchronization help patients as they make just one visit to the pharmacy instead of haven to make multiple visits which leads to nonadherence as the patient often forget. Previous studies show that the implementation of a medication synchronization regime help decrease nonadherence, thereby reducing outpatient visit by 3 %, emergency room and hospitalizations visits by 9%.3 Rationale: The study is a before-and-after design to show if there is a difference in adherence rates pre and post-intervention after medication synchronization.

Objective: To compare the impact of med sync on adherence rates of existing specialty patients 6-months pre and post-synchronization. It is hypothesized that post-med sync arm would have higher adherence rates when compared to pre-med sync. Our null hypothesis is, there is no statistical difference between adherence pre-and post-medication synchronization. And, an alternate hypothesis, that, there is a statistical difference between adherence rates pre-medication synchronization and post-medication synchronization.

Methods: The retrospective cohort study will compare the adherence rates of the same cohort of patient with HIV/AIDS and one to three comorbid conditions, diabetes, dyslipidemia and hypertension, and received care for 6-months. The PDC of each comorbid condition will be calculated, analyzed, and the result compared with the PDC results of post-med sync. Data for the study will be generated from the community specialty pharmacy's prescription claims Record of a patient who picked-up medication that treats at least one of three comorbid conditions during the period from April 1, 2019, to April 8, 2020. The results will be tabulated, and a statistical analysis conducted using the software Minitab® 18.1. Descriptive statistics, i.e. means, standard deviations and standard error of the means will be obtained. The difference in adherence rates between the pre-and post-medication synchronization cohorts will be determined by using a paired t-test at 95% confidence intervals. Also, Pearson's correlation will be conducted to identify associations between medication synchronization and adherence.

Implications: Specialty pharmacy offers support that proactively manages adherence and therapy-related needs by contacting the patient a week before a refill is due and contacts are recorded. However, in our region med sync has never been implemented in a specialty pharmacy, our study seeks to measure the impact of med sync on adherence rate in a specialty pharmacy. References: 1. Holdford D, Inocencio T. Adherence and persistence associated with an appointment-based medication synchronization program. Journal of the American Pharmacists Association. Volume 53, Issue 6, 2013, Pages 576-583; ISSN 1544-3191. (http://www.sciencedirect.com/science/article/pii/S1544319115304039 2. SB 800. Medication Synchronization. Florida State Legislation; 2017. 3. D'Arrigo T. Evidence for med synchronization benefits continues to grow. Pharmacy Today; 2018. pharmacytoday.org/article/S1042-0991(18)30476-6/fulltext. Accessed September 23, 2019.

6-Implementation of a Pharmacist-Led Adherence Service for a Self-Insured Healthcare System. Ehlinger A, Veach S, Witry M, Al-Khatib A, University of Iowa, Powers A, Nadermann K, Purcell Smith J, MercyOne Pharmacies. Email: allison-sekula@uiowa.edu

Objective: The objectives of this project are to: 1) assess the impact of pharmacist-led adherence service interventions on adherence rates of employees of a healthcare facility using a new platform 2) assess the number and type of interventions completed through the program.

Methods: This study will be designed as a prospective, single-group intervention study for a self-insured Midwestern hospital and one of its associated outpatient pharmacies. Adherence services for insured employees of the health system were previously managed using an established Medication Therapy Management (MTM) web-based platform. The health system changed vendors and began using a different platform for employee MTM services in October 2019. The sample includes patients over 18 years old, insured by the employer, fill prescriptions at the study pharmacy, and have at least one chronic medication with an adherence rate less than or equal

to 80%. The pharmacy will use the new platform to track adherence rates, refills, and estimated avoidable costs from improved adherence. A pharmacist will contact included patients by phone to identify non-adherence issues using a sample script, based on the Personal Evaluations of Transitions in Treatment tool and the Drug Adherence Workup tool. The pharmacist will recommend an intervention to improve adherence, such as: contacting the patient's doctor for medication refills, refilling the medication in question at the pharmacy, providing adherence counseling, initiating adherence packaging or medication synchronization, or suggesting the use of a caregiver to assist with medication administration. If a medication is incorrectly flagged (i.e. discontinued medication, received samples, change in direction), this will be updated in the patient's profile and no longer considered meeting inclusion criteria for that medication. The patient's adherence rate will be re-assessed at 90 days post initial intervention via the MTM platform. A follow-up phone call will assess the patient's perceived adherence change and success of the pharmacist intervention(s). The adherence rate will be calculated through Refill Days Covered (RDC) on the platform, then analyzed with a paired t-test. RDC will be based on total fill history through the pharmacy with that given drug and is listed on the patient profile for the platform. The number and type of interventions will be analyzed using descriptive statistics.

Results/Conclusions: Research in progress

7-Clinical Medication Synchronization: An Innovative Service to Enhance Adherence. Fossum C, University of Colorado. Email: cara.fossum@cuanschutz.edu

Background: By allowing a pharmacist to coordinate a single monthly pick-up date for chronic medications with the patient, medication synchronization has shown to enhance adherence. Once enrolled in traditional medication synchronization, four days prior to the selected pick-up date, the needed prescriptions populate in a separate screen to allow time to obtain needed renewals and/or inventory. Despite widespread incorporation of medication synchronization programs into pharmacies, patients continue to choose which medications to fill ultimately leading to un-enrollment and decreased adherence. Physician changes to medication regimens such as discontinued therapy or dose increases aren't always communicated to the pharmacy, which can hinder medication synchronization. Studies have shown medication adherence increases when pharmacists are more involved in the patient care plan. Pharmacists have success with retaining patients on medication synchronization programs by communicating more frequently with patients to learn about regimen changes and to provide education. In an effort to create a more robust medication synchronization program, the pharmacy created Clinical Medication Synchronization to develop a more systematic way to enroll and retain patients. The program flags patients at point of sales to be counseled by a pharmacist every time they pick up their medications. Clinical Medication Synchronization includes traditional medication synchronization, switching from 30 to 90 day supplies when possible, substituting brands to generics, and mandatory counseling by a pharmacist at each point of sale transaction. Despite the short study period which may skew adherence data, this program will likely improve adherence due to the increased communication with patients.

Objective: To determine if Clinical Medication Synchronization improves medication adherence as measured by medication possession ratio (MPR) compared to patients on traditional medication synchronization.

Methods: This is a secondary-use prospective study as the data used for analysis started prior to the research for prescription fill history reporting and data is currently being collected. The intervention is the implementation of clinical medication synchronization at three community pharmacies. The computer system at three locations will be used to filter patients under one specific payor to be selected for clinical medication synchronization. These patients will be on at least one chronic medication for hypertension, diabetes, or cholesterol. MPR will be collected and compared between clinical medication synchronization patients and traditional medication synchronization patients. The control group consists of the traditional medication synchronization patients with similar medications and demographics. MPR is calculated by dividing the days supply of a prescription by the days between the patient picking up the one being measured and the next one. The primary outcome will be the difference in MPR for patients on medications for diabetes, hypertension, or dyslipidemia between the two groups. A subgroup analysis of patients on insulin therapy will be performed, as insulin is not placed on medication synchronization due to varying day's supplies. The data will be collected monthly in real time over a period of 6 months from September 2019 through March 2020. An independent T-test will be used to analyze differences in MPR between groups.

Results: N/A

Implications/Conclusions: N/A

8-Evaluation of Medication Therapy Management Services Provided by a Preferred Pharmacy Network from the Prospective of a Healthcare Plan. Geraghty K, McCall K, Tu C, University of New England, Felton M, Martin's Point Healthcare, Couture S, Hannaford. Email: kgeraghty@une.edu

Objective: The objective of this study is to describe and analyze outcomes associated with Martins Point Health Care -Generations Advantage members who received Comprehensive Medication Review (CMR) and Targeted Medication Review (TMR) services. The primary outcome utilizes pharmacy claims data to calculate prescription medication adherence rates. Secondary outcomes utilize medical claims data to evaluate the rate of medical office visits, emergency department visits and hospitalizations before and after receiving CMR and TMR services.

Methods: This retrospective, cohort study has received Institutional Review Board exemption. All subjects are Medicare beneficiaries who are enrolled in a Generations Advantage Medicare Plan at Martin's Point Health Care (MPHC) and who received MTM services at the preferred pharmacy provider, Hannaford Pharmacy. Data will be collected via the OutcomesMTM platform, AthenaNet and internal medical claims data at MPHC.Outcome measures will be abstracted from CMR submissions and medical records and include but are not limited to: time and date of interactions, interventions identified, provider follow-up and acceptance, adherence scores, and pharmacist practice site (Centralized vs Store pharmacist). The primary outcome is adherence to non-insulin antidiabetic medications, statin medications, and renin-angiotensin-aldosterone system antagonists as measure by proportion of days covered. These reports will be generated, merged and deidentified by the Informatics Department at MPHC. All datasets will be analyzed using R version 3.6.1. Preliminary

Results: Pending.

Implications/conclusions: This research study has the potential to impact patient populations eligible for MTM through improved CMR and TMR services. The results of this study could demonstrate the value of community pharmacist initiated CMR/TMRs, the benefit to having a designated MTM pharmacist, and the optimal time to complete a CMR/TMR in relation to provider visits. In addition, this project may identify patient populations that are most likely to benefit from MTM services as it relates to improved medication adherence rates.

9-Impact of Automated Notifications on Prescription Abandonment. Gunderson E, Newell B, Robertson A, University of Kansas, Melton B, University of Kansas Medical Center. Email: eggunderson@ku.edu

Objective: Prescription abandonment is one of many factors that can have a large influence on patients and their quality of life as it relates to disease progression and reduced functionality over time. One way pharmacies are attempting to increase medication adherence and decrease prescription abandonment is by communicating with patients through automated notifications. To date, there has been limited publications comparing automated phone notifications versus text messaging notifications on prescription abandonment rates. The primary objective of the study is to compare the effect of automated phone messages, automated text messages, and no automated notifications on prescription abandonment rates with Medicare star-rated medications. Secondary objectives will compare different age groups (i.e. 18-64 years versus 65 years old or over) within each study arm to evaluate age-related preferences for automated messages.

Methods: This retrospective analysis of de-identified prescription data from one regional division of a large community pharmacy chain will collect data from July 1st, 2018 to June 30th, 2019. Data will be included if the patient was at least 18 years old on July 1st, 2018 and had an active prescription for a star-rated medication throughout the entirety of the study time frame. Star-rated medications, based on the therapeutic class code, include dyslipidemia (statins), hypertension (RAS antagonists), and oral type 2 diabetes mellitus medications. Patients will be excluded if notification enrollment or disenrollment took place during the entire study frame. The patients included within each specific study arm would have self-selected which automated notification method, if any, they preferred through communication with the pharmacy. Additional patient demographics will also be collected.

Statistical Analysis and Preliminary Results: The data collection process is in progress with no preliminary results to report. Once de-identified data is retrieved from the respective party involved, demographics will be assessed using descriptive statistics. Kruskal Wallis will be used to determine if differences in prescription abandonment exist between automated phone interventions, automated text messages, and no automated notifications. Mann-Whitney U will be used to determine if the percentage of prescription abandonment differs between specific age groups within each study arm. An a-priori alpha of 0.05 will be used for all analyses.

Conclusions and Implications: The result of this study may help pharmacies provide appropriate recommendations to patients regarding which method of communication can have the greatest impact on prescription abandonment. This stage is currently in process.

10-Evaluation of Pharmacist Peer Coaching to Increase Utilization of a Clinical Alert Tool for Medication Adherence in Traditional Chain Pharmacies. Hake K, Carroll J, Somma McGivney M, Coley K, Hake K, University of Pittsburgh School of Pharmacy, Ossman K, Ramanna C, Amigh J, Rite Aid. Email: kelsey.hake@yahoo.com

Objective: The objectives of this project are to (1) evaluate a peer coaching method designed to enhance pharmacists' response to a clinical alert tool that identifies opportunities for adherence interventions in traditional chain pharmacies and (2) assess the impact of pharmacist coaching on adherence quality metrics. Community pharmacies are increasingly seeking opportunities to improve medication adherence rates to improve patient care and decrease direct and indirect remuneration (DIR) fees. Peer coaching is one implementation strategy utilized by traditional chain pharmacies to identify and solve problems in conducting and sustaining quality improvement projects. Routine peer coaching is important for maintaining momentum in improving quality of care.

Methods: A mixed-methods approach will be used. Pharmacies within a traditional chain will be selected from one region that spans parts of western Pennsylvania and eastern Ohio. A pharmacy cohort will be systematically selected based on their adherence metric performance, geographic proximity, and input from regional pharmacy leadership. Face-to-face, individualized peer coaching will be performed by a community-based pharmacist resident with each pharmacist at the identified pharmacies. The resident will execute a

minimum of one follow-up call or visit for each coached pharmacist after the original coaching session for continued support and reinforcement. After full coaching intervention is complete, semi-structured interviews with coached pharmacists will be conducted to qualitatively assess their perceived impact of the coaching. Interviews will be conducted by a researcher to eliminate bias. Interviews will be audio-recorded, transcribed, then undergo full thematic analysis. Additionally, participating pharmacies' adherence metrics will be collected and compared to a control group of pharmacies within the same traditional chain. T-tests or Mann-Whitney U tests will be utilized to assess changes in the mean adherence scores and adherence intervention frequencies. This project was designated as program evaluation by the University's IRB.

Preliminary/Final Results: Research in progress.

Conclusions/Implications: A peer coaching method may enhance the response to a clinical alert tool and increase medication adherence interventions. Quantitative analyses and themes elicited from pharmacist interviews will be formulated into a framework to provide guidance for other pharmacies implementing coaching programs to increase medication adherence metrics.

11-Assessing the Impact of Medication Adherence Packaging on Patients in an Independent Community Pharmacy. Hartman C, Garofoli G, Elswick B, West Virginia University, Turner J, Kacmarik K, Moundsville Pharmacy. Email: christopher.hartman@hsc.wvu.edu

Objective: The objective of this study is to evaluate the impact of Medication Adherence Packaging on medication management for patients and/or their caregivers. Four measures will be investigated: 1) the time required by patients and/or their caregivers to manage medications, 2) the perceived stress created by managing medications, 3) the level of confidence in correctly taking medications, and 4) the amount of reported missed doses.

Methods: This is a prospective analysis of newly enrolled patients in a medication adherence packaging service at an independent community pharmacy. The medication packaging service provides a one-month supply of all medications in multi-dose packages, labeled with the patient's name, medications, directions, and date and time of administration. Participants must be a newly enrolled patient or caregiver of a newly enrolled patient in both the medication adherence packaging service and medication synchronization service, prescribed at least five chronic medications, at least 18 years of age or older, able to read and write in English, and consent to a pre-survey and post-survey. If the primary responsibility of medication management resides with an individual other than the patient, upon consent, the respective caregiver will complete a pre-survey and post-survey. Patients will be excluded if they are currently enrolled in a medication adherence packaging service or a medication synchronization service, prescribed less than three chronic medications, less than 18 years of age, cannot read and write in English, or do not consent to a pre-survey and post-survey. The survey will evaluate four primary facets of medication management: the amount of time required by a patient and/or caregiver to manage medications, the perceived stress medication management creates for patients and/or caregivers, the level of confidence patients and/or caregivers have in correctly taking medications, and the amount of reported missed doses. A pre-survey will be administered to patients and/or caregivers prior to receiving medication packaging services and a post-survey will be administered following 60 days of medication packaging utilization. The survey will also include an open response section where participants can include additional comments. Descriptive statistics will be calculated on participant demographic characteristics, and pre-and post-survey responses will compare time, perceived stress, confidence, and frequency of missed doses using chi square tests.

Results: Research is in progress.

Conclusions: Although research is in progress, the survey results will potentially show the impact of Medication Adherence Packaging on time required to manage medications, perceived stress caused by medication management, confidence medications are taken correctly, and the amount of reported missed doses for both patients, and/or their caregivers. Results of this study may impact the expansion of the medication adherence packaging services in independent community pharmacies.

12-Investigation of the Barriers and Facilitators of Medication Adherence in Patients with Type 2 Diabetes Across Different Health Literacy Levels -a Mixed Methods Study. Huang Y, South Dakota State University, Shiyanbola O, Pecanac K, University of Wisconsin-Madison. Email: YenMing.Huang@sdstate.edu.

Objective: Type 2 diabetes (T2D) is the leading cause of death in the U.S., and it incurs tremendous health expenditures associated with various complications due to poor diabetes control. Medication adherence, which is associated with patients' health literacy, should be consistently practiced in order to achieve optimal diabetes control. However, no literature has systematically explored the multiple psychosocial and communication barriers and facilitators at the individual level that mediate the linkage between health literacy and medication adherence. With better knowledge of these contexts specific to individual communication, psychosocial factors, and health literacy, we will be able to develop more tailored interventions and customized strategies to enhance medication adherence. Objectives: (1) To examine whether the barriers and facilitators associated with medication adherence differ among people with T2D across different levels of health literacy. (2) To explore patients' perceptions of the barriers and facilitators of medication adherence across different health literacy levels. (3) To understand how the interview data reported about the barriers and facilitators of medication adherence help explain the quantitative results reported on the surveys.

Methods: This cross-sectional study was performed using an explanatory sequential mixed methods design which is composed of a quantitative phase with a survey questionnaire and subsequent qualitative phase with semi-structured interviews. The Health Literacy Pathway Model was used to identify the psychosocial and communication factors that may influence medication adherence. A

convenience sampling technique was applied for participant recruitment. Study participants were eligible if they were at least 20 years of age, diagnosed with T2D, presently being prescribed to take at least one diabetes medicine by mouth daily, and able to read and speak in English. Analysis of covariance and direct content analysis were used respectively in quantitative and qualitative analysis. A joint display was used to present the integrated findings from quantitative and qualitative data.

Results: In the quantitative phase, 205 participants provided complete information in the survey questionnaire. In the qualitative phase, 23 participants completed semi-structured interviews. Confirmed by quantitative and qualitative data, holding stronger self-efficacy, having fewer concern beliefs about medication, and possessing fewer perceived barriers to medication-taking are necessary for better medication adherence. Linking medication-taking to daily routine and focusing on the internal locus of control is an imperative approach to foster self-efficacy of medication use. Addressing patients' life experience and clarifying medication misinformation may help participants cope with their concerns with medications. Solving the high cost of medications and therapy-related problems could lessen participants' perception of barriers to medication-taking.

Conclusion: To optimally support patients' diabetes care, practitioners need to address patients' psychosocial factors and patient-provider communication after accounting for their health literacy levels in order to improve patients' medication adherence. For high-adherent patients, regular tracking of their medication taking with an emphasis on their possible barriers to medication use would be sufficient. Special attention to improve self-efficacy among low-adherent patients with adequate health literacy may be effective. In addition, addressing both self-efficacy and concern beliefs about medication use may be more effective for low-adherent patients with inadequate health literacy.

13-Impact of Prescription Synchronization on Medication Adherence at Health-System Community Pharmacies. Landis B, Intermountain Healthcare. Email: briee.landis@imail.org

Objective: The first major barrier that a patient faces is retrieval of their medication. When patients are on multiple medications that have been started at different times, it can be overwhelming and require frequent trips to the pharmacy. A prescription fill synchronization program allows patients to align their fill dates so they can pick up all their medications on one day. This service has been shown to improve adherence and fill rates that has the potential to result in better outcomes for patients. In the pharmacy, this program improves work flow, increases proportion of days covered (PDC) scores, and improves patient care. There are advantages and disadvantages to using PDC as an adherence measure, because IT assumes the patient is adherent after they have picked up their medication. PDC is a standard adherence measurement in existing literature and is used in determining Centers for Medicare and Medicaid Service star ratings. The objective of this study is to determine the impact that a local medication synchronization program has on patient's adherence to their chronic medications. it will also provide an understanding of HOW medication adherence differs between health conditions and age groups. these results will support prior literature that synchronization programs improve medication adherence.

Methods: The sample population includes patients who have been enrolled in the medication synchronization program since July 1, 2019 and have filled prescriptions through the program for at least two months. This is to ensure that patients are using the program after enrollment. patients with chronic health conditions such as diabetes, hypertension, asthma, chronic obstructive pulmonary disease, gastroesophegeal reflux disease, depression, anxiety, thyroid disorders, hyperlipidemia, blood clotting disorders, seizures, heart disease, inflammation, hormonal disorders, and urinary disorders will be included. Proportion of days covered scores 5 months before enrollment in medication synchronization will be compared to the PDC score obtained five months after enrollment. This time period was chosen to account for the recent program implementation and data collection needs. Data will be collected from the Enterprise RX and OMNICELL Time My Meds systems. Date of medication fill AND day supply will be analyzed with excel in order to calculate proportion of days covered score. A two-sample proportion test through minitab 19 will be performed to analyze the PDC score change. Other data evaluated will include the number of prescriptions per patient filled by medication synchronization and categories of health conditions implied by drug class.

Preliminary/Final Results: There are no results at this time.

Conclusion/Implications: By enrolling patients in a program that automatically fills their prescriptions on the same day each month, we expect to see an increase in adherence to those medications. the results of this study will show which patients depending on age group and health condition have the most improvement in adherence through a synchronization program.

14-Evaluation of Different Adherence Services Offered by Community Pharmacies for Those Living with HIV. Luu T, Hayat, Gidal B, University of Wisconsin. Email: luu2@wisc.edu.

Objective: Evaluation of different adherence services offered by community pharmacies on adherence and patient satisfaction among those living with HIV, in a community pharmacy.

Methods: This quality improvement Project will evaluate the different adherence services as interventions. These services will be provided by an independent community pharmacy. Patients identified to receive these services for the project include adults living with HIV, 18 years and older, who have a proportion of days covered (PDC) below 80% in the last 90-day period, who fill their medications with the community pharmacy. Pharmacists will begin the process by completing a comprehensive medication review (CMR) with the identified patients. The pharmacist and patient will decide on appropriate adherence services to be utilized by the

patient that are offered by the pharmacy. Current adherence services offered by the pharmacy include the following: a CMR, simplify-my-meds (SMM) program (medication synchronization), and bubble-packaging of medications. The primary outcomes of this project will be a change in adherence to anti-retroviral therapy medications, after the CMR and implementation of adherence service(s). The PDC will be a form of measurement of adherence and will be calculated from assessing patients' refill histories in the pharmacy's electronic dispensing system. The PDCs will be a calculated 90-day period prior to the CMR and the 90-day period after implementation of service(s). Secondary outcomes will include number of phone calls after implementation of services, patient satisfaction survey, time to sync medications, viral load, and PDC for all of the patient's medications. All measurements will be collected 90 days post CMR by the pharmacist. Viral load will be collected from the patient's prescribing physician. Data collection for this project will begin in the fall of 2019 and will end 90 days after the last completed CMR. All data gathered will be stored in an Excel spreadsheet, on a secure, electronic database after it has been coded and de-identified. Data Analysis will include descriptive statistics of pre and post data. This project is considered a quality-improvement project and is exempt from UW-Madison Institutional Review Board approval.

Results: In progress.

Implications/Conclusions: HIV/AIDS is a unique health condition in which community pharmacists can help prevent the spread and worsening of the infection. Increasing adherence rates not only helps people living with HIV control their disease burden, but also helps the community. The pharmacy currently offers multiple adherence services and comprehensive medication reviews for patients to improve their adherence. Anticipated results of the project include identification of which adherence services offered by this community pharmacy are effective at improving medication adherence and identifying improvement in the workflow process.

15-Targeting Social Determinants of Health to Assess Interventions to Improve Patient Outcomes and Community Pharmacy Quality Measures. Magner B, Kebodeaux C, Schadler A, University of Kentucky, Hudspeth B, Dickson K, Elliott E, Kroger Pharmacy. Email: elizabeth.henry@uky.edu.

Objective: The objective of this study is to 1) measure the impact of a standardized adherence intervention that can be implemented in the community pharmacy setting to specifically address social determinants of health (SDOH) that affect patient adherence to chronic medications and 2) improve overall community pharmacy quality performance through adherence interventions in communities at higher risk for social vulnerabilities. Social determinants of health are commonly overlooked when assessing a patient's overall health and access to care. Addressing these barriers to adherence, such as cost, transportation, and food insecurity, can be essential to pharmacists providing quality healthcare.

Methods: This is a prospective, interventional, single-arm cohort study to measure the impact on patient adherence to chronic medications after a standardized adherence intervention that addresses SDOH. Adherence interventions will occur at four locations within two regional divisions of a large community pharmacy chain. County health ranking data and community pharmacy performance measures will be used to determine the four pharmacies at highest risk for adherence barriers due to SDOH. The screening inclusion criteria will be patients who have a proportion of days covered (PDC) of <80% over the last six months for at least one chronic medication. A preexisting standard adherence intervention assessment will be used with integrated questions to target social determinants of health to identify additional potential barriers to adherence The screening tool will be utilized to screen eligible patients at the four included pharmacy locations. The assessment tool will be delivered either telephonically or in person at these pharmacies. Patients who screen positive for social barriers to adherence and provide consent will be followed for a period of three months. The primary outcomes will be measured by percentage change in adherence, using PDC, from the 6-month pre-intervention period to the 3-month post-intervention period. Paired t-tests will be used for pre-and post-interventional analysis and descriptive statistics will be used to report patient demographics and to quantify specific adherence interventions. Study results will be analyzed using IBM SPSS Statistics version 23.

Results: Research in progress. It is anticipated that the results should determine the efficacy of standard adherence interventions on improving patient adherence and overall pharmacy quality performance in communities negatively impacted by SDOH.

Conclusion: Research in progress. This project has the potential to greatly impact adherence for patients that may reside in underserved areas. As readily available practitioners, pharmacists can play an essential role in screening patients for social vulnerabilities in order to help overcome those barriers to care that are often overlooked. The results of this project can also give pharmacists the knowledge of how to use SDOH to improve the quality and fidelity of adherence interventions.

16-Making a "PAcT" to Be More Adherent: Patient Accountability in Medication Adherence. Mercadante A, Law A, Roosan D, Western University, Lee S, High Point University. Email: amercadante@westernu.edu

Objective: The purpose of this study is to test the validity and applicability of the revised Patient Accountability Tool (PAcT) with an online patient portal. Nonadherence to medication has been a well-documented and widely tested subject. Researchers have studied numerous interventions and devices to focus on 'nonadherent' patients but with limited success and sustainability. Despite extensive research on medication nonadherence, little is known about the factors that impact 'adherent' patients. Patient engagement and accountability has shown potential value in achieving positive results with adherence and health outcomes. Our team previously

proposed a conceptual model of accountability developed from extensive literature search, with four domains (patient belief in medications, information seeking, awareness, and relationship with the provider). A tool was then developed to measure patient accountability (PAcT) using items in these domains; face and content validity was established with a panel of six lay individuals and four experts. A pilot validation study of the PAcT showed the need for modifications in wording to better cover domains of accountability and a more inclusive literacy score. Accordingly, the PAcT was revised by adding items and a domain of perceived familiarity with medications. The current study will test validity of the revised tool, application of the tool in patients on an online portal, and fit of the model.

Methods: A prospective cross-sectional controlled study was designed using a mobile-app interface. The revised PAcT encompasses 22 items on a four point Likert scale of agreement. The PAcT will be administered to a panel of 300 participants, 150 each from two groups-those who are adherent (proportion of days covered (PDC) >/= 0.80) and those who are nonadherent (PDC <0.80). Sample size was estimated based on a power of 0.80 for the study. Participants are deemed eligible for the study if they are 18 years or older in age, belong to the health plan panel, have access to the mobile interface, and voluntarily agree to provide their email. The email will be utilized only by the health plan to dispense the $10 incentive upon completion of the survey. The panel will be provided an informational consent to opt in/out of the survey at any point. The survey will be administered through a remote monitoring patient application through mobile phone created by the health system.

Preliminary Results: Data collection is in progress. Data analysis will include descriptive statistics and psychometric testing. Reliability of the scale will be measured using Cronbach's coefficient alpha and construct validity with factor analysis using Principal Component method and varimax rotation. Domain-specific and overall accountability scores for the two groups will be calculated and compared via independent Student's t-test. Path analysis will be used to test the relationships of the proposed model. Data collection will be continued until the desired sample size is reached or January 2020. Results will then be tabulated.

Conclusions/Implications: Higher accountability scores are expected to be associated with higher adherence (PDC) scores. It is also expected that the hypothesized domains define and explain variance in accountability.

17-The role of Community Pharmacists Improving Inhaler Adherence Post Education and Vaccine Recommendations in Asthma and COPD Patients. Paolucci E, Mistry A, Machado M, MCPHS University, Gardella A, Biogen. Email: elizabeth.paolucci@mcphs.edu.

Background/Objectives: The primary objective of this study is to evaluate the impact of a community pharmacist's interventions in improving inhaler adherence at thirty and sixty day follow-up in asthma / COPD patients. Poor adherence to inhaler treatment may be associated with suboptimal outcomes, leading to disease exacerbation. Previous studies have shown adherence to inhalers reduces the risk of exacerbations, improves symptom management, and patient outcomes. Community pharmacist have the ability to implement solutions to resolve adherence barriers and increase inhaler adherence rates. In addition, this study will ensure patients are up to date with vaccinations, utilize the In-Check DIAL device to improve inhaler technique, and assess patient satisfaction with pharmacist-driven care in their asthma and/or COPD management. The In-Check DIAL device is a tool used to assess a patient's peak inspiratory flow rate. The device simulates the resistance characteristics of the meter dosed inhaler or dry powder inhaler that patient is prescribed.

Methods: This will be a prospective, single-center study located at Walgreens pharmacy in Massachusetts. Patient's ≥18 years old with an active prescription for at least one maintenance / rescue inhaler will be eligible to. Patients who are <18 years old, pregnant, and/or unable to speak English will be excluded. The resident will identify appropriate participants during prospective drug review. The resident will review prescription fill history for all inhalers and then retrieve the patient's immunization history by accessing the Massachusetts Immunization Information System, noting vaccinations appropriate for asthma/COPD patients per Advisory Committee on Immunizations Practices recommendations. Once identified, prescriptions will be marked for recruitment. Upon obtaining consent, patient assessment form will be completed, including demographic information, adherence to their inhaler, and symptom management. The resident will identify barriers to adherence and provide solutions. The resident will assess their inhaler technique utilizing the In-Check DIAL device and correct poor technique when necessary. Finally, the patient will be asked to complete a patient satisfaction survey after consulting with the resident. The resident will call the patient at 30 and 60 days from initial intervention to follow-up and verbally assess inhaler use and symptom management. A paired t-test will be used to analyze adherence rates from baseline to 30 days and 60 days. Inhaler technique will be assessed pre and post education and analyzed using proportions. Questions from the patient satisfaction survey will be assessed using a likert scale. The results of the satisfaction survey will reveal patient's satisfaction with a community pharmacist's role in asthma/COPD management. Lastly, vaccination rates will be assessed by percentage of patients who accepted vaccines to be administered.

Preliminary Results: N/A

Implications: We anticipate data will shed light on how community pharmacists can expand their role in managing asthma and COPD patients. We also anticipate that increasing inhaler adherence for patients, they will have decreased expenses by having less exacerbations that require hospital visits and corticosteroid use, and less co-pays from not refilling their rescue inhaler as often.

18-Impact of Utilizing the Drug Adherence Work-up (DRAW) Tool and Targeted Interventions in Patients with Type 2 Diabetes to Improve Proportion of Days Covered (PDC). Park J, Yum C, Nguyen D, Poliskey K, Walgreens, Carlson A, Northeastern University. Email: julian.park@walgreens.com

Objective: According to the World Health Organization, only 50% of patients in developed countries are adherent to treatment recommendations for chronic disease state management. Patients achieving at least 80% adherence are thought to receive the clinical benefit of the medication, improved patient outcomes, and a reduction in hospitalization rates. For patients with type 2 diabetes (T2D), poor adherence to medications leads to avoidable suffering and excess healthcare costs. The Drug Adherence Work-up (DRAW) tool is a set of questions that was developed to help pharmacists identify reasons for medication nonadherence. The objective of this study is to evaluate the impact of utilizing the DRAW tool and targeted interventions in patients with T2D with baseline proportion of days covered (PDC) of less than 80% in the community pharmacy setting. Through these interventions, it is expected that patients will have improved adherence to their diabetes medications after 6 months.

Methods: This prospective study will be submitted to the Institutional Review Board for approval. The electronic system will identify patients who have baseline PDC of less than 80% and are receiving more than one oral medication for T2D at the community pharmacy. After identification, a pharmacy representative will contact the patient using the DRAW tool to provide targeted adherence counseling. The following data will be collected: patient, age, gender, PDC, and current T2D medications. The primary outcome is a mean change of PDC from baseline to 6 months after a pharmacist-led intervention. Secondary outcomes will include primary reason for nonadherence and the type of intervention conducted by the pharmacy representative. Descriptive statistics will be utilized to analyze the data.

Preliminary/Final Results: Research in progress.

Conclusions/Implications: Research in progress.

19-The Importance of Pharmacy Team Outreach on the Percentage of Maintenance Therapies Resumed in a Target Patient Population. Prozementer D, Neal H, Notre Dame University of Maryland. Email: dprozementer1@live.ndm.edu.

Objective: To analyze a large volume chain pharmacy teams' ability to impact patient non-adherence to past due maintenance medications that are not currently filled by looking at past and current data. Patient non-adherence leads to overall higher rates of mortality and morbidity. 3 of 4 people who start a maintenance medication will discontinue their treatment within one year. Some patients are non-adherent due to the cost of medications, side effects or lack of knowledge of the importance of medications. The primary objective of this project is to perform a systematic review examining the pharmacy system targeted patient adherence outreach calls to assess the impact of these calls. Patients that come into the pharmacy to pick up their maintenance medication that was filled through pharmacy outreach calls to resume therapy are considered a success.

Method: This systematic review took place in a large community pharmacy chain. Patients past due on their maintenance therapy medications i.e. hypertension, hyperlipidemia, diabetes, asthma medications, allergy medications, and birth control are contacted and are offered to refill their prescription(s). Data is measured by 3 markers; the number of eligible therapies (number of scripts identified for an adherence outreach call) % of therapies resumed (percentage of scripts that are refilled and picked up following an adherence outreach call), % of patients reached (percentage of patients successfully contacted). Markers to be considered successful are % of customers that were reached and % of patients that refilled and picked up their medications within a 14-day period from the day the phone call was initiated. The data evaluated will go back 6 months and will include a 7th and 8th month where two pharmacy students will be designated to make weekly phone calls to patients that meet criteria for past due maintenance medications refills.
Preliminary Results: Research in progress.

Conclusion: Research in progress. The percentage of maintenance medications resumed in targeted patients will increase as adherence outreach calls are completed each week.

20-Lack of Medication Refill Synchronization in Patients with Heart Failure: Quantification of Burden and Effects on Adherence. Rashid S, Stephens K, Lipscomb University. Email: slrashid@mail.lipscomb.edu

Objective: Our objective is to quantify the burden of medication refill dyssynchronization and its association with adherence in HF patients. Heart failure (HF) patients have complex medication regimens further complicated by vast comorbidities. The burden of multiple trips to the pharmacy each month could decrease medication adherence, leading to hospitalizations and worsening clinical outcomes. Hospitalizations and therapy adjustments increase medication desynchronization and complexity, potentially creating a positive-feedback cycle.

Methods: We prospectively enrolled patients hospitalized at Vanderbilt University Medical Center who were diagnosed with HF for at least six months and had a minimum of six chronic medications. After consent, pharmacy refill records were obtained and patients completed a survey assessing sociodemographic information, perceived complexity of HF disease and medications, as well as pharmacy utilization. The primary outcome was the mean six-month medication refill consolidation score (RCS), calculated as: 1 – (total the number of prescription medications each month)/ (number of pharmacy visits each month). The medication RCS was calculated based on pharmacy refill records from nine months prior to the enrollment date, with a three-month run-in period. The run-in period collects baseline information to ensure medication was on hand leading into the study period to conduct adherence calculations. A RCS of 50% is the population average for patients with non-HF chronic cardiovascular conditions. Medication adherence was measured using the Cumulative Medication Gap (CMG) equation with > 0.20 defined as non-adherence. Secondary outcomes included comparing refill consolidation scores between HF patients with reduced ejection failure (HFrEF) and preserved

ejection fraction (HFpEF), as well as assessing frequency of hospitalization's in the previous nine months, and patient perceived complexity on both medications and synchronization.

Preliminary Results: Interim analysis from 27 of the planned 60 patients with HF is presented. The patient cohort is characterized by a mean age of 65 ± 10 years, 56% male, and 63% HFrEF with 78% hospitalized in the past 6 months. The mean number of comorbidities is 8 ± 2, with the most common comorbidities being hyperlipidemia (78%), hypertension (74%), coronary artery disease (59%), and diabetes (54%). The mean number of unique medications is 23 ± 6, comprised of a mean of 12 ± 4 chronic prescription medications of which 6 ± 2 are for HF. Patients made 5 ± 2 visits to the pharmacy each month for prescription medications. The mean number of unique prescribers is 7 ± 3 in the six-month study period. The median 6-month RCS is 36% (IQR 24%, 50%), with 80% below the average score consolidation score. The median CMG is 0.24 (IQR 0.17, 0.32), indicating non-adherence was frequent. Low medication synchronization by RCS had no correlation with non-adherence (r2 = 0.039).

Conclusion: Patients with HF are prescribed a higher number of medications and have poorer refill consolidation. Poor refill synchronization may be associated with the vast comorbidities and chronic medications. Lack of refill synchronization was not associated with increased nonadherence in patients with HF in preliminary analysis, but small sample size limits conclusions.

21-Impact of Primary Care Clinical Pharmacist on Star Ratings Metrics. Roberts K, University of Missouri. Email: kjr7cf@mail.umkc.edu.

Objective: Direct and Indirect Remuneration Fees (DIR) are financial penalties given to pharmacies based on the Centers for Medicare and Medicaid Services (CMS) star ratings metrics. Of the star ratings metrics that CMS utilizes, pharmacies are held accountable to five metrics, including three that focus on adherence. Multiple studies have demonstrated that ambulatory care pharmacists can have a positive impact on medication adherence. This suggests that ambulatory care pharmacists have an opportunity to impact these star ratings metrics. Objective: The purpose of this study is to evaluate patient adherence before and after establishing care with ambulatory care pharmacists utilizing the following four Medicare Part D star ratings metrics: medication adherence for diabetes medications, medication adherence for hypertension medications, medication adherence for cholesterol medications, and statin use in persons with diabetes.

Methods: A retrospective observational before and after study was conducted at two primary care clinics and a community pharmacy within an academic medical center. A primary care clinical pharmacist (PCCP) was onsite at each clinic and working under a collaborative practice agreement to provide comprehensive medication management (CMM). Patients receiving a consultation with the PCCP between July 1, 2017 and August 31, 2019 were included the study. Patients were excluded if they were hospitalized for more than 14 days out of the year, had documented reason for non-recommended statin therapy, or filled their diabetes, hypertension, or cholesterol medication at an external pharmacy. The four star ratings metrics for each patient were assessed prior to beginning care with the PCCP and again either one month following their last PCCP appointment or six months after their initial visit with the PCCP, whichever was shorter. The portion of days covered was used to calculate the patients' adherence to the medications. Descriptive statistics were used to analyze the impact the PCCPs had on the metrics.

Results: During the study period, 156 patients established care with a PCCP. Of those, 33 patients had a preferred pharmacy of Mizzou pharmacy. Data collection is ongoing and results will be presented at the American Pharmacy Association (APhA) Annual Meeting and Exposition 2020.

Conclusions: Conclusion to follow result analysis.

22-An Exploratory Sequential Mixed Methods Study to Adapt the Illness Perception Questionnaire for use with African Americans Towards Improving Diabetes Medication Adherence. Shiyanbola O, Rao D, Bolt D, Ward E, University of Wisconsin-Madison, Brown C, University of Texas-Austin. Email: dmrao@wisc.edu

Objective: Using exploratory sequential mixed methods, we aimed to: 1) characterize beliefs about type 2 diabetes mellitus (T2DM) among African Americans (AAs); 2) Using this information, write new culturally-adapted (CA) Illness Perception Questionnaire-Revised (IPQ-R) items; and 3) evaluate the reliability and validity of the CA IPQ-R. Background: Existing medication adherence interventions are sometimes ineffective for AAs because their unique illness perceptions are not adequately addressed. The IPQ-R which identifies illness perceptions has reliability and validity limitations when used with AAs/Blacks, prompting the need for development and examination of a CA version of the IPQ-R.

Methods: Using the Extended Self-Regulatory Model framework that identifies key concepts related to medication adherence including the sociocultural and psychological factors influencing AA illness beliefs, 40 English-speaking self-identified AAs with T2DM participated in six focus groups to explore their perceptions of diabetes and how sociocultural factors influence diabetes self-management. Inductive and deductive content analysis revealed themes and actual phrases of individuals which were used to write new CA IPQ-R items. Next, cognitive interviews were done to explore CA item meaning/interpretations with a sample of 10 AAs. The CA IPQ-R was then administered to a convenience sample of 148 AAs in a survey which included the Adherence to Refills and Medication-Diabetes scale, Beliefs in medicines, and sociodemographic information. Initial correlation analysis examined the reliability of new items. Internal consistency (Cronbach's alpha) for sub-scales of the CA IPQ-R was also examined. Multiple linear regression analyses were used to examine predictive validity of the CA IPQ-R.

Results: Themes related to the existing IPQ-R and a new sociocultural subscale showed AA perceptions were influenced by their discrimination experiences, AA community, and perceived role of race in relation to personal control. Findings were used in adapting the IPQ-R. Five questions from the CA IPQ-R were problematic and revised during cognitive interviews. The internal consistency of the included old items within each subscale improved with the addition of new items, except for the timeline subscale. A new sociocultural domain showed significant moderate correlations with all existing subscales except identity and treatment control (Range of r: 0.24 to 0.49), indicating the rationality of a possible separate but related subscale in the CA version. The CA IPQ-R significantly predicted medication adherence along with beliefs in medicines and demographic characteristics. The individual subscales of the CA IPQ-R were correlated with concern beliefs (range=0.28 to 0.60). Cronbach alphas of subscales ranged from 0.35 to 0.927. Illness perceptions and concern beliefs covaried with medication adherence (B= -0.29, p=0.003; B= -0.29, p=0.013) respectively, showing predictive validity.

Conclusion: Qualitative data showed that the IPQ-R was missing culturally relevant factors that affect illness perceptions in AAs with T2DM. The added new items improved the reliability and validity of IPQ-R in T2DM for use with AAs. These data provide an empirical basis for pursuing further psychometric analyses with larger AA samples, including those with and without T2DM. The adapted questionnaire may be useful in identifying AAs illness perceptions modifiable in medication adherence interventions.

23-Measuring the Impact of Pharmacist-Led HIV Adherence Interventions in Community Pharmacies. Soribe N, University of Arkansas for Medical Sciences, Swoope M, Hiland S, Walmart. Email: nsoribe@gmail.com.

Objective: Specialty medications are used to treat chronic, complex, and rare conditions. These medications are often high in cost, have complicated administration, storage, and handling requirements, and require ongoing monitoring. In addition, low health literacy combined with complicated regimens often result in nonadherence, or inappropriate use of medications. Patients with specialty diseases, such as HIV, have high nonadherence rates leading to poor clinical and economic outcomes. Previous literature has reported that a proportion of days covered (PDC) of 95% in HIV patients is required to achieve viral suppression and patients with PDC less than that are at a higher risk of drug resistance. Due to the high cost of HIV medications, most health plan payers utilize specialty pharmacies which may not be convenient or preferred by the patient. Community pharmacists are one of the most trusted and the most accessible health care providers. Community pharmacists that are equipped to properly deliver specialty service and education to HIV patients is key in ensuring that patients can receive optimal care that is convenient for them. The main objective of this study is to identify the impact of pharmacist-led interventions in HIV patients at community pharmacies located in a national retail chain.

Methods : This is a retrospective review that will look at data from September 1, 2019 through December 31, 2019. A specialty adherence program has been implemented in pharmacies across a large national retail chain. Using a proprietary adherence management workflow system, pharmacist only alerts are system generated. The alerts generated through the system identify patients with a PDC <90 %. There are eleven HIV adherence alerts that are specific to antiretroviral drug classes and drug combination therapies. Once completed, the pharmacist documents the intervention in the platform. The primary investigator will identify the documented intervention and conduct a quantitative analysis of each intervention.

Preliminary Results: Research is still in progress. Data is currently being collected and will be analyzed as weekly reports are received.
Implications/Conclusions: Data from previous research studies highlight the necessity and impact of pharmacist interventions on adherence. This research project will provide insight on the type of interventions that can be conducted within a retail chain for specialty patients. Future studies will assess effectiveness on adherence

24-Patient Medication Adherence Among Pharmacies Participating in a North Carolina Enhanced Services Network. Urick B, University of North Carolina, Bhosle M, Community Care of North Carolina, Farley J, University of Minnesota. Email: benurick@email.unc.edu.

Objective: Improving medication adherence can reduce healthcare spending, and studies have demonstrated community pharmacists can positively impact adherence through the provision of enhanced services. The North Carolina (NC) Community Pharmacy Enhanced Services Network (CPESN) was formed in early 2014 with the goal of enhancing the care provided through its network pharmacies. Objective: The goal of this study is to evaluate differences in medication adherence performance scores between enhanced services pharmacies that participated in the NC-CPESN and control pharmacies in NC that did not.

Methods: Medication adherence performance data for statins, renin-angiotensin system antagonists, oral diabetes medications, and a custom multiple chronic medication measure were gathered from quarterly reports between December, 2014 and September, 2016. Data for these quarterly reports was derived from NC Medicaid claims. These data were combined with pharmacy demographic and service offering data from the National Council on Prescription Drug Plans dataQ™ database. Descriptive statistics were used to evaluate differences in demographics and service offerings between study cohorts. Generalized estimating equations were used to evaluate the relationship between medication adherence and pharmacy cohorts, demographics, and service offerings.

Results: There were 267 enhanced services pharmacies and 1,872 control pharmacies included in this analysis. Enhanced services pharmacies were much more likely to be independent pharmacies, located in rural counties, offer multidose compliance packaging, and offer delivery services, but were less likely to offer 24-hour emergency services. Persistently higher adherence scores were

observed for enhanced services pharmacies, with differences across measures ranging from 3.0% to 8.2% ($p<0.001$). In multivariable models, the difference between enhanced services and control pharmacies was explained by differences in offerings of multidose compliance packaging and delivery services, which were associated with 3.4% to 8.2% and 3.3% to 4.0% improvements in adherence, respectively ($p<0.05$). Additionally, we found that having a drive-up window was associated with -2.8% to -3.4% lower adherence scores ($p<0.05$).

Conclusions: This study finds that enhanced services pharmacies had greater adherence performance scores for the NC Medicaid population. These differences appear to be due to CPESN enhanced services pharmacies' greater offering of multidose compliance packaging and delivery. Future work is needed to expand this analysis to other populations, as well as explore the relationship between medication delivery and adherence.

25-Integration of Motivational Interviewing to Promote Adherence into a Managed Care Pharmacy Program. Varghese C, Wu S, Strickling M, Meister A, Woodfield S, Stearns J, Sweeney M, Chen A, Cedarville University. Email: stephaniewu@cedarville.edu.

Objective: The level of patient adherence to their medication regimen is imperative to improving health outcomes and avoiding the consequences of disease. Medications that undergo review as part of a prior authorization process are often costly, and the implications of non-adherence can be detrimental to patients and payers. A key method for improving medication adherence is motivational interviewing (MI) which is traditionally performed in many clinical settings and often by pharmacists. Through MI, the patient self-identifies the importance of medication adherence. By incorporating the tool of MI into patient counseling on how to use his or her medication, they could pose an improvement in a patient's overall health experience with their medication while also minimizing added costs due to poor medication adherence, particularly with higher risk and higher cost medications. Thus, the objective of this study was to evaluate the impact of a MI-based intervention on patient self-reported adherence and actual adherence.

Methods: The effect of MI was evaluated through an intervention with a retrospective cohort comparator that received standard care. A team of student pharmacists undertook a quality improvement initiative with patients over the age of 18 that had a prior authorization (PA) approved under private insurance. Student pharmacists had received training in MI and used a modified version of the the Million Hearts Pharmacist Drug Adherence Work-Up Tool to evaluate barriers and facilitators for adherence. Medication adherence was assessed with a single-item question, "How many doses have you missed in the last 7 days?" Proportion of days covered (PDC) will be calculated for 6 months after the first fill of the medication for those patients as well as for a retrospective control group. A PDC of 80% will be considered adherent. The control group will be matched based on age, gender, and prescribed medication. Data will be entered into Excel and analyzed via SPSS v.26.0 (Armonk, NY). In addition to descriptive statistics, a Chi-Square (to compare adherence status by group) and ANOVA with Bonferroni corrections will be run.

Results: The study enrolled 95 patients who met inclusion criteria into the MI intervention group. Within the intervention group, 38.9% of the participants were male, while 61.1% were female. The median age was 51 years old. Data are currently being abstracted from records to determine PDC rates and will be analyzed by January.

Conclusions: Upon completion of this study, the results will have the potential to reveal the effectiveness of MI in improving adherence in high cost medications. In pharmacy practice, this can be exceedingly useful among medications requiring a PA to ensure outcomes are being achieved and prevent complications related to nonadherence for patients and payers.

26-The Effectiveness and Feasibility of the Appointment-Based Model in a Large Retail Chain Pharmacy. Verhovec K, Jeon M, St. Louis University, Corpening B, Brand A Walgreens. Email: kacee.verhovec@stlcop.edu.

Objective: The purpose of this study is to determine the effectiveness and feasibility of the appointment-based model (ABM) in a large retail chain pharmacy. The primary objective is to describe the impact of the ABM on patient adherence in select chronic disease states, specifically hyperlipidemia, hypertension, and diabetes. The secondary objective is to determine patient acceptance of monthly in-person appointments with a pharmacist and if accepting, to determine how long do these appointments typically take.

Methods: Patients were identified from the list of patients enrolled in the pharmacy's medication synchronization program as of November 1, 2019. This prospective open-label study compared three different groups of patients: those who continued enrollment in the medication synchronization program and agreed to monthly in-person appointments with a pharmacist, those who continued enrollment and did not agree to attend monthly in-person appointments with a pharmacist, and those who unenrolled from the medication synchronization program. Inclusion criteria were patients taking 4 or more chronic medications with a refill history of at least 3 months of one or more of the required medications (statin, angiotensin-converting enzyme inhibitors/angiotensin II receptor blockers, or oral antidiabetic medication). Those excluded from the study were those who were unable to be reached after three attempts and delivery patients. Initial contact of patients was to re-synchronize patients enrolled in the program, to capture any new medications, dosage changes, or discontinued medications. Those willing to continue enrollment in the medication synchronization program were informed to expect a phone call a few days before the medication fill date. During this follow-up phone call, an in-person pharmacist appointment was offered to the patient to discuss the patient's medications and offer pharmacist-led interventions. Primary endpoints were change in portion of days covered (PDC) at 4, 8, and 12 weeks post-initial contact compared to

baseline in all groups, change in PDC at 4 weeks post-appointment in those in the appointment-accepted group, and percentage of patients who accepted monthly in-person pharmacist appointments. Secondary endpoints were show rate of in-person appointments with a pharmacist and time spent with a patient during pharmacist-led in-person appointments.

Results/Implications: The study is ongoing; results are pending. The results of this study would help determine the effectiveness and feasibility of the appointment-based model in a variety of pharmacy settings, which may allow pharmacies to expand their medication synchronization programs. Comparisons between groups will determine the effect of medication synchronization as well as in-person appointments with a pharmacist on PDC. Further research may assist other retail chain pharmacies implement these types of programs into their workflow to improve patient care.

27-Addressing Health Literacy, Beliefs, Adherence and Self-Efficacy (ADHERE) Program to Improve Outcomes on Patients with Diabetes: Preliminary Results from A Pharmacist-Led Randomized Controlled Trial. Virrueta N, Maurer M, Smith P, University of Wisconsin-Madison, Walbrandt Pigarelli D, William S. Middleton Memorial Veterans Hospital. Email: nvirrueta@wisc.edu.

Objective: Our pilot work documents the influences of health literacy on diabetes medication adherence through other psychosocial factors, including self-efficacy, illness beliefs, and medication beliefs. A comprehensive pharmacist-led intervention focusing on health literacy and psychosocial components may be an effective way to address medication non-adherence. Our study's objective is to examine whether enhancing usual patient care in an ambulatory pharmacy with a more focused patient-centered intervention will improve medication adherence.

Methods: This is a randomized study with half of the patients receiving usual care within a pharmacist-led clinic and others receiving an additional pharmacist-provided tailored health literacy-psychosocial support intervention. The aim is to enroll thirty English speaking participants between the ages of 18-80 years old diagnosed with diabetes, who must take at least one diabetes medication, have low diabetes medication adherence indicated by medical charts, and have a HbA1c of 8% or greater. The intervention group received additional tailored care, consisting of two face-to-face intervention sessions and four follow-up phone calls. An initial questionnaire including self-reported measures of medication adherence (primary outcome) and psychosocial factors: diabetes beliefs, medication beliefs, self-efficacy for medication use and health literacy (secondary outcomes), was administered. Participants' responses informed the pharmacist's tailored delivery of additional care addressing the participant's specific needs. A follow-up questionnaire was administered post-intervention to assess changes. HbA1c values were collected before and after the study as a clinical measure of medication adherence. Data analysis included descriptive statistics for all participants, outcome changes analyzed by calculating the differences in pre/post intervention questionnaire scores, and the Mann Whitney U test applied to examine whether there was a significant difference between the control and intervention group scores.

Results: Currently, 20 participants have enrolled in the study. Eight participants randomized to the intervention group completed the second face-to-face session. At baseline, medication and illness beliefs were the most frequently reported barriers to medication adherence. Several reported concerns about the long-term effects of their diabetes medications, n=9 (50%), and some participants reported concerns about becoming too dependent on diabetes medications, n=6 (33%). The majority of participants n=14 (78%) reported concerns about their diabetes. Mann Whitney U tests were statistically non-significant, however there were several notable trends for the intervention group at follow-up: (1) downward trend in the A1C, (2) negative medication beliefs trending down, and (3) improvement in illness beliefs about the effect of diabetes on participant's lives.

Discussion: The downward trend in mean A1C for the intervention group may suggest improved diabetes control. Non-statistically significant Mann Whitney U test results may have been due to the small sample size and suggest that there is no compelling evidence that the groups differ. However, several trends suggest important positive changes for the intervention participants at follow up and warrant further exploration. Future study activities will include qualitative interviews with intervention participants to further explore the possible acceptability and sustainability of the intervention. Pharmacist-led adherence improvement interventions that focuses on health literacy mediated psychosocial variables, beliefs about medicines and illness, may improve A1C levels.

28-A Formative Evaluation Of A Pharmacist-Led Adherence Intervention at a Regional Supermarket Pharmacy Call Center for Employees with Obstructive Lung Disease. White A, Murray K, Antinopoulos B, Berenbrok L, Carroll J, McGivney M, Coley K, University of Pittsburgh. Email: krm134@pitt.edu.

Objective: The objective of this evaluation is to inform a pharmacist-led adherence intervention at a regional supermarket pharmacy call center for employees with obstructive lung disease. Up to 15% of US adults have obstructive lung diseases including asthma and chronic obstructive pulmonary disease (COPD). The total cost of asthma, including medical costs, loss of productivity, and early deaths, increased from $56 billion in 2001 to $81.9 billion in 2013. The total cost of COPD was estimated to be $36 billion dollars in 2010 and projected to rise to $49 billion by 2020. Previous studies demonstrate that pharmacist interventions improve patient adherence to asthma and COPD medications and reduce acute asthma and COPD exacerbations. This regional supermarket chain is a self-insured employer with pharmacy locations in five states. The call center currently provides numerous telephonic medication management services to their patients including targeted adherence interventions. By enhancing the asthma/COPD adherence intervention, this supermarket chain seeks to improve medication adherence in their employees and reduce overall medical costs.
Methods: To inform the telephonic adherence intervention, data will be collected and triangulated from three sources: (1) a comprehensive literature review; (2) pharmacists and student pharmacists working at a regional supermarket pharmacy call center;

and (3) local medication adherence and employee health subject matter experts. First, a comprehensive literature review was conducted to identify current best practices for pharmacist-led telephonic interventions for patients with asthma and COPD. Second, real-world processes and experiences will be collected through semi-structured interviews with call center pharmacists and student pharmacists using complete target population sampling, which involves sampling everyone within the target population. The interview guide will be informed by the Joint Commission of Pharmacy Practitioner's (JCPP) Pharmacists' Patient Care Process. Interview questions will elicit information on current processes and practices for adherence interventions at the call center. Finally, discussions with subject matter experts will generate information to further refine the telephonic adherence strategy. Data from the literature search, interviews and discussions will be mapped back to the JCPP Pharmacist Patient Care Process. A content analysis of the qualitative data will be conducted by the research team to further guide improvements to existing telephonic adherence interventions. This project will be submitted to the University's Institutional Review Board.

Preliminary Results: Research is in progress. To date, the comprehensive literature review is complete. Semi-structured interview scheduling is planned. Implications Pharmacist led telephonic interventions have the potential to reduce hospitalizations and acute asthma and COPD exacerbations in patients with obstructive lung disease. The objective of this formative evaluation is to improve the effectiveness of current telephonic adherence interventions at a regional supermarket pharmacy call center. The resulting telephonic adherence intervention could serve as a model to improve employee health outcomes and reduce healthcare costs of employers.

29-Influence of Adherence Packaging on a Hypertensive Population's Medication Adherence Habits and Blood Pressure. Wolfe A, Adams B, Park K, Kelly K, West Virginia University. Email: aywolfe@mix.wvu.edu.

Objective: Medication adherence is an area of increasing concern over the past decade. In the United States each year, 50% of treatment failures, 25% of hospital stays, and 125,000 deaths are the result of non-adherence each year. Various risk factors play a role in non-adherent behavior, such as cognitive deficits/declines, polypharmacy, depression, complex regimens, and lack of relationship with Primary Care Provider, Pharmacists, or other healthcare provider. The aims of this study are to 1) to improve and measure adherence in patients with hypertension after the implementation of a multi-med, multi-dose blister pack adherence system in a community pharmacy setting and 2) to assess change in systolic blood pressure.

Methods: This prospective, non-controlled, interventional, feasibility study will be completed at a single pharmacy. Individuals who are 45 years old, that live in a child-free environment due to packaging, fill their prescriptions at the study site, are taking one blood pressure medication, and take five medications (including over-the-counter medications) on a daily basis will be included in this study. Those who are not enrolled in the adherence packaging system will be excluded from the study. At the time of enrollment in the Dispill medication packaging program, participants will receive a survey to assess self-reported adherence behaviors and will have a baseline blood pressure measured and recorded. After enrolling in the Dispill program, blood pressure will be assessed at each refill pick-up for a three-month period to examine change after adherence packaging is implemented. Medication fill dates will be analyzed. A post-survey will be given to all participants to assess change in self-reported adherence behaviors at the end of the three-month study period. Participants will be individually interviewed using set questions and an audio recording device to assess perceptions regarding the blister pack system and general medication adherence at the end of the 3-month enrollment period. Quantitative and qualitative analyses will be completed at the end of the study period. Quantitative analyses will consist of a chi-squared and T-test to measure change over the length of the study. Grounded theory analysis will be used for qualitative analysis.
Results: Research in progress

Conclusions: N/A

Implications: A community pharmacy setting empowers pharmacy staff to have a direct impact on patient adherence and outcomes. The issue of non-adherence can be addressed at every refill pickup, which is typically more frequent than visits to a physician's office. The goal of this study is to gain a better understanding of barriers to medication adherence and to improve medication adherence through the utilization of a medication adherence packaging system. Although the focus of this project is on patients with hypertension, results from this study could potentially be extended to patients with other disease states to improve their health outcomes.

30-Comparison of Methods to Assess Basal Insulin Adherence Among Texas Medicaid Enrollees with Type 2 Diabetes. Zhang H, Zhang H, Barner J, Moczygemba L, Rascati K, University of Texas-Austin. Email: hx.zhang@utexas.edu

Objective: Given the uncertainty in days' supply of insulin, there is a need to better standardize insulin adherence when using claims data. This study assessed and compared two adherence measures [Medication Possession Ratio (MPR) and adjusted MPR (aMPR)] among Texas Medicaid enrollees with type 2 diabetes who use the following basal insulins: intermediate-acting (NPH), first and second generation long-acting (FGLA, SGLA).

Methods: This Texas Medicaid retrospective study used data from 1/1/14-6/30/17 for patients 18-63 years, with >1 claim for basal insulins (NPH, FGLA, SGLA). Subjects also: had ≥1 oral hypoglycemic agent (OHA) or glucagon-like peptide-1 receptor agonist (GLP-1RA) 6-months pre-index, had no claims for a different basal insulin or premix insulin during 1-year follow-up, and were continuously enrolled. The index date was the first date of a basal insulin claim without a claim for the same insulin 6 months prior. The dependent variable was 1-year adherence to the index insulin, using both mean and dichotomous (80% threshold) MPR and aMPR. The aMPR (developed by Baser et al., 2010) equals MPR times an adjustment factor (average refill interval/average days' supply) and adjusts for

inaccuracies in recorded days' supply of insulin claims. Descriptive and bivariate and logistic regression analyses were performed. Covariates included age, gender, baseline basal insulin, comorbid medications, OHA adherence, total number of medications, index administration type (pen vs. vial), post-index number of OHAs, bolus insulin and GLP-1RA use.

Results: Of the 5,034 patients included, 187 were NPH, 4,522 were FGLA, and 325 were SGLA users. Bivariate analyses showed that the SGLA users had the highest mean MPR (0.55±0.27 vs. 0.59±0.27 vs. 0.68±0.25, p<.0001), aMPR (0.73±0.28 vs. 0.78±0.26 vs. 0.83±0.23, p=.0001), proportion of patients with MPR ≥80% (21% vs. 28% vs. 40%, p<.0001), and proportion of patients with aMPR ≥80% (49% vs. 60% vs. 67%, p=.0004). After controlling for covariates, NPH (OR:0.590 [95% CI:0.372-0.935]) and FGLA users (OR:0.762 [CI:0.589-0.985]) were significantly less likely to be adherent (MPR ≥80%) than SGLA users. However, after controlling for covariates, the likelihood of having aMPR ≥80% was similar across the three groups. Older age, pre-index basal insulin use, higher OHA adherence, higher total number of medications, lower post-index number of OHAs, other insulin and GLP-1RA use were independently associated with higher likelihood of both MPR ≥80% and aMPR ≥80%. Administration type was associated with the likelihood of MPR ≥80% only.

Conclusions: Mean and dichotomous aMPRs were higher than MPRs, which shows that this method may adjust for uncertainty in recording days' supply in claims databases. In the unadjusted bivariate analysis, whether using MPR or aMPR, SGLA insulins had significantly higher adherence compared to FGLA and NPH. However after adjusting for covariates, the relationship between the three groups was no longer significant when using aMPR. While MPR may underestimate true insulin adherence, aMPR's adjustment using averages may overestimate adherence. As more research is conducting using aMPR in claims databases, both MPR and aMPR should be reported.

31-Evaluating the Impact of a Depression Screening Intervention on Medication Adherence in Patients with Chronic Conditions in a Large Community Pharmacy Chain. Zmoira A, Johnson A, Rogers E, Kroger Health, Johnson K, The University of Cincinnati. Email: alzmoira@gmail.com.

Objective: Medication nonadherence is associated with increased morbidity and mortality, higher rates of hospital admissions, and increased healthcare costs. Nearly half of all adults have a chronic condition requiring chronic medications and approximately 50% of patients do not take their medications as prescribed. Medication nonadherence can be attributed to multiple barriers, including demographic, sociocultural, and behavioral factors. Community pharmacists are routinely focused on identifying patients who are nonadherent to their chronic medications and improving adherence through innovative pharmacy services. Previous studies identified a relationship between nonadherence and behavioral factors, such as depression. Pharmacists are equipped to impact medication nonadherence, but can improve the approach by integrating a depression screening into an adherence assessment to address the relationship between depression and medication nonadherence. Objectives: The purpose of this study will be to assess the feasibility of conducting a depression screening as part of a comprehensive adherence assessment for nonadherent patients or patients at risk of becoming nonadherent. The primary objective of this project is to evaluate the impact of a comprehensive adherence intervention on patient adherence. The secondary objectives will evaluate patient reported barriers to adherence, Patient Health Questionnaires 2/9 (PHQ2/9) results, and pharmacist interventions.

Methods: The study will be conducted in five pharmacies within a large community pharmacy chain with an existing adherence intervention program. Pharmacists will undergo resident-led program specific training to identify and conduct medication adherence interventions and PHQ2/9 screenings with study participants. Potential study participants will be identified through a generated medication fill report in the electronic dispensing system, which identifies prescriptions waiting to be picked up for at least seven days, indicating the patient may be nonadherent or at risk for nonadherence. Once the patient presents to pick up their medication, the pharmacist will engage patients in an adherence assessment in a private counseling room to identify barriers to medication adherence and implement comprehensive pharmacy solutions. As part of the adherence assessment, pharmacists will administer a PHQ2/9 and follow an organization-specific protocol for interpreting and responding to PHQ results. Follow up will be required for patients who screen positive on the PHQ9 to ensure the adequate steps were taken, such as completion of a primary care provider appointment, referral to a specialist, initiation of nonpharmacologic therapy, initiation of an antidepressant therapy, or counseling for the new medication, as appropriate. For patients who are not able to pick up their own medications, a telephonic adherence assessment and depression screening can be performed. Pharmacists will follow the same protocol for conducting the intervention and documenting the results. Descriptive statistics will be used to analyze the study objectives. The primary outcome, impact on medication adherence, will evaluate if patients receive their next refill on time following the comprehensive adherence assessment. Successful on time refill will be determined by patient fill dates and documented if the patient received their medication within six days of the date their medication is expected to run out.

Results/Conclusions: Research in progress

Cardiovascular Care

32-Prevalence of Psychosocial and Cognitive Multimorbidity in Older Adults with Atrial Fibrillation and Association with Health-Related Quality of Life and Symptom Burden: The SAGE-AF Study. Bamgbade B, Pierre-Louis I, Saczynski J, Northeastern University, Sanghai S, Lessard D, Forrester S, McManus D, University of Massachusetts, Waring M, University of Connecticut. Email: b.bamgbade@northeastern.edu

Objective: The objective of this study was to examine patterns of psychosocial and cognitive multimorbidity in older adults with AF, patient characteristics related to psychosocial and cognitive multimorbidity, and the association between multimorbidity and HRQoL and symptom burden. Individual psychosocial (depression or anxiety) and cognitive impairments occur in approximately 40% of adults with AF and is associated with poorer health-related quality of life (HRQoL) and increased symptom burden. However, it is unknown how often these impairments co-occur, in which patients they most often co-occur, and associations between psychosocial and cognitive multimorbidity and HRQoL and symptom burden.

Methods: Patients with AF age ≥65 years with a CHA2DS2VASC risk score less than 2 and eligible for oral anticoagulation therapy were recruited from five cardiology electrophysiology and primary care clinics in Massachusetts and Georgia. Psychosocial and cognitive impairment were measured using validated measures (depression: Patient Health Questionnaire-9; anxiety: Generalized Anxiety Disorder-7 scale; and cognitive impairment: Montreal Cognitive Assessment Battery). HRQoL was measured using the Atrial Fibrillation Effect on QualiTy-of-Life questionnaire. Symptom burden was measured using 4 items assessing how bothered participants were by AF related symptoms (e.g., palpitations, dizziness). Patient demographic and clinical characteristics were measured using surveys and medical record abstraction. Data were analyzed using analysis of variance, Kruskal-Wallis tests and Mantel-Haenszel $\chi 2$ tests.

Results: Participants (N= 1244, 49% female) were on average 76+/-7 years; 86% were non-Hispanic white. Approximately 35% of participants had 1 impairment, 17% had 2 impairments and 8% had 3 impairments; 39% had none of the 3 impairments examined. Patients with psychosocial and cognitive multimorbidity were older, less educated, non-white and had medical comorbidities. Compared to participants no impairments, patients with 1, 2 and 3 impairments had higher odds of poor HRQoL (adjusted OR [AOR] = 1.77, 95% CI 1.21, 2.60; AOR=6.64, 95% CI 4.43, 9.96; and AOR= 7.50, 95% CI 4.40, 12.77, respectively) and those with 2 and 3 impairments had higher odds of high symptom burden (AOR = 3.69 95% CI 2.22, 6.13; and AOR = 5.41 95% CI 2.85, 10.26).
Conclusions: Psychosocial/cognitive multimorbidity is common among older adults with AF and is associated with poor HRQoL and high symptom burden. As poor HRQoL and symptom burden are associated with increased health care utilization, clinicians might consider incorporating psychosocial and cognitive screens into routine care as this may identify a high-risk population.

33-Anti-Diabetic Agents with Cardiovascular Benefits in a Chronic Heart Failure Population. Barfield R, Duncan H, Francis J, Mardis A, Straw L, Scalese M, Prisma Health-Midlands, Mardis C, University of South Carolina. Email: reagan.barfield@prismahealth.org.

Objective: The objective of this study is to evaluate the opportunities for optimization of and barriers to anti-diabetic therapies in an ambulatory advanced heart failure patient population. Diabetes significantly increases the risk of developing cardiovascular disease, including heart failure and heart failure complications. Recently published data have emphasized the benefits of anti-diabetic agents, particularly glucagon-like peptide-1 receptor agonists (GLP-1 RA) and sodium-glucose co-transporter 2 (SGLT-2) inhibitors, in patients with diabetes and cardiovascular disease to decrease major adverse cardiovascular events. SGLT-2 inhibitors have also been associated with reductions in heart failure hospital admissions. As a result, the American Diabetes Association 2019 Standards of Medical Care in Diabetes recommend use of GLP-1 receptor agonists or SGLT-2 inhibitors in patients with known atherosclerotic cardiovascular disease and SGLT-2 inhibitors in patients with known heart failure. In addition, the SGLT-2 inhibitor dapagliflozin has been associated with a 27% reduction in a composite endpoint of cardiovascular death or heart failure events in patients with existing heart failure with reduced ejection fraction (HFrEF) with or without diabetes. Due to these new approaches to treatment, further assessment of prescribing patterns for anti-diabetic agents by cardiology providers in a heart failure patient population is warranted to identify and address causes of suboptimal adherence to guideline recommendations.

Methods: This retrospective, single center, cross-sectional analysis evaluates adult patients with an active diagnosis of heart failure seen in an outpatient heart failure clinic between May 1, 2019 and June 30, 2019. The primary endpoint is the proportion of patients on appropriate guideline-directed therapy with GLP-1 RA and/or SGLT-2 inhibitor and the proportion of patients who are optimal candidates for initiation of or conversion to appropriate guideline-directed therapy. Secondary endpoints include reasons for not prescribing anti-diabetic therapies, frequency of deferral to primary care, and opportunities in patients without diabetes. Appropriate candidates who are not on anti-diabetic therapies will be compared to those who are receiving therapy. Data collection points include patient demographics, practitioner type, number of recent heart failure hospitalizations, select comorbid conditions, current heart failure therapies, and whether or not patients have documented use of anti-diabetic therapy during the study period. Continuous variables will be analyzed with t-test, and categorical variables with either Chi-square or Mann-Whitney U.

Results: Data has been collected and resident results are in progress.

Conclusion: Data has been collected and resident results are in progress.

34-Evaluation of the use of Oral Anticoagulation Therapy in Ambulatory Patients Diagnosed with Atrial Fibrillation. Brock Z, Boomershine V, Banner Health. Email: zbrock18@gmail.com.

Objective: The objectives of the 3 studies reported herein were to determine the relative bioavailability of a new ibuprofen/acetaminophen fixed-dose combination (FDC) compared with its individual monocomponents administered together or separately in adults, to evaluate the effects of food on the FDC in adults, and to determine drug exposure from the FDC in adolescents. Ibuprofen and acetaminophen are effective over-the-counter analgesics/antipyretics that exert their effects via different mechanisms

of action. An FDC containing 250 mg ibuprofen and 500 mg acetaminophen (administered as 2 x 125 mg ibuprofen/250 mg acetaminophen) has been developed that provides greater analgesic efficacy than the same doses of either agent alone without increasing the risk for adverse events.

Methods: Two studies (Studies 1 and 2) conducted in healthy adults aged 18–55 years used a crossover design in which subjects received a single dose of each treatment with a 2-day washout period between each. Pharmacokinetic (PK) comparisons in Studies 1 and 2 were determined by constructing 90% confidence intervals around the estimated difference between test and reference treatments using a mixed-effects model based on natural log-transformed data. Because the monocomponent doses in Study 1 were different from those of the FDC, PK parameters were dose normalized to ibuprofen 250 mg and acetaminophen 500 mg for the purposes of this comparison. In Study 3, the bioavailability of ibuprofen and acetaminophen from a single oral dose of the FDC was assessed in healthy adolescents aged 12–17 years. No formal statistical analyses were planned for this study.

Final Results: A total of 35 and 46 subjects were enrolled in Studies 1 and 2, respectively, and 21 in Study 3. Ibuprofen and acetaminophen in the FDC were bioequivalent to the monocomponents given alone or together. Food reduced the maximum concentration (Cmax) for ibuprofen and acetaminophen by 36% and 37%, respectively, and time to Cmax (i.e., Tmax) was slightly delayed. Overall drug exposure (area under the curve [AUC]) to ibuprofen or acetaminophen in the fed versus fasted state was bioequivalent. In adolescents overall, exposure to ibuprofen and acetaminophen was comparable to that in adults, with a slightly higher overall exposure to ibuprofen. Exposure to acetaminophen and ibuprofen in adolescents aged 12–14 years was slightly higher versus those aged 15–17 years. Adverse events were similar across all treatment groups.

Implications/Conclusions: The FDC ibuprofen/acetaminophen 250 mg/500 mg has a PK profile that is similar to its monocomponent constituents when given alone or together, indicating no drug-drug interactions and no formulation effects. Similar to previous findings for the individual components, the rate of absorption of ibuprofen and acetaminophen was slightly delayed in the presence of food. Exposure to ibuprofen and acetaminophen in adolescents was similar to that in adults, supporting the same dosing in that population. The FDC was well tolerated.

35-Implementation and Evaluation of a 24-Hour Ambulatory Blood Pressure Monitoring Service in Community Pharmacies: A Feasibility Study. Dixon D, Patterson J, Grigsby J, Gatewood S, Holdford D, Salgado T, Virginia Commonwealth University, Jadallah J, Hawkey L, Buford Road Pharmacy, Kaefer T, Curtis M, Bremo Pharmacies. Email: dldixon@vcu.edu

Objective: Develop and implement a community pharmacy-driven 24-hour ambulatory blood pressure monitoring (ABPM) service. Out-of-office blood pressure (BP) measured by 24-hour ABPM is a more accurate predictor of cardiovascular risk and mortality than office-based BP. Yet, access is frequently cited as a major barrier to ABPM, which is offered by community pharmacies in other countries (e.g., Ireland). Hence, our interest is in determining whether a similar approach would work in the United States.

Methods: This is a prospective, single-arm, non-randomized, clinical trial to determine the feasibility of community pharmacies providing 24-hour ABPM. Subjects were enrolled if they were at least 18 years old and suspected by their provider of having white coat hypertension (HTN), masked HTN, sustained HTN, initial diagnosis of HTN, resistant HTN, or symptoms of hypotension while receiving antihypertensive therapy. Exclusion criteria included atrial fibrillation, hemodialysis, pregnancy, and dementia. Two independent community pharmacies implemented the service. Both pharmacies identified one pharmacist and one pharmacy technician to receive training and lead implementation at their respective site. Marketing to physician practices included on-site detailing by representatives from the pharmacies and study investigators. Providers were given a referral template to fax to the pharmacy so the pharmacist could contact the subject and schedule an appointment where consent was obtained along with demographic and insurance information. The pharmacy staff programmed the ABPM to record BP every 30 minutes during the daytime and every 45 minutes at nighttime and counseled on appropriate use. Upon return of the device, the data was reviewed by the pharmacist who counseled the subject on the results, then forwarded their recommendations to the referring provider. The primary outcome is patient satisfaction with the service. This is being measured using a satisfaction questionnaire with responses being provided on a 5-point Likert scale. The questionnaire was developed based on previously published surveys of ABPM services. After completion of the study period, we will conduct focus group interviews with the pharmacy staff and referring providers to understand their perceptions of the service. Interviews will be recorded, transcribed verbatim, and thematically content analyzed using an inductive approach.

Preliminary Results: The initial enrollment goal of 24 subjects was achieved six weeks into the six-month study period. For this reason, the protocol was amended to increase the sample size to 100. At the time of this interim analysis, 40 subjects were enrolled with the following demographics: 35% female, 35% African-American, and mean (SD) age of 53 (±16.2) years. The most common indications for referral included sustained (39%) and white coat HTN (28%). Over 80% of subjects strongly agreed or agreed that they were satisfied with the overall service. Importantly, some success has been achieved in obtaining reimbursement for this service from third party payors, but this implementation aspect remains in progress. The study period will end December 2019. \

Implications: These preliminary data suggest that there is significant provider interest in having access to 24-hour ABPM services and that patients are satisfied with a pharmacy-based service. A community pharmacy-driven 24-hour ABPM service may be feasible.

36-Opportunities for and Barriers to Sacubitril/Valsartan Initiation in a Chronic Heart Failure Population. Duncan H, Barfield R, Francis J, Mardis A, Straw L, Scalese M, Prisma Health -Midlands, Mardis C, University of South Carolina. Email: hannah.duncan@prismahealth.org.

Objective: The purpose of this study is to assess opportunities for and barriers to initiation of sacubitril/valsartan use in an outpatient advanced heart failure clinic in patients with heart failure with reduced ejection fraction (HFrEF). In the 2017 American College of Cardiology/American Heart Association/Heart Failure Society of America heart failure guideline focused update, use of an angiotensin receptor/neprilysin inhibitor (ARNI) such as sacubitril/valsartan, is a Class I recommendation in patients with HFrEF. Results of the Prospective Comparison of ARNI with ACEI to Determine Impact on Global Mortality and Morbidity in Heart Failure (PARADIGM-HF) trial, comparing enalapril to sacubitril/valsartan, showed that sacubitril/valsartan was superior to enalapril in reducing the risk of heart failure hospitalization and cardiovascular death. However, recent data from the Change the Management of Patients with Heart Failure (CHAMP-HF) Registry show that 86.1% of patients in this registry are not prescribed sacubitril/valsartan despite its indication and lack of contraindications. Further assessment of prescribing patterns for sacubitril/valsartan by cardiology providers in the heart failure population is warranted to identify and address causes of suboptimal adherence to guideline-directed therapy.

Methods: This is a retrospective, single center, cross-sectional retrospective analysis evaluating adult patients within an outpatient heart failure clinic seen between May 1, 2019 and June 30, 2019. The primary endpoint is the proportion of eligible patients currently prescribed sacubitril/valsartan and the proportion of patients who are optimal candidates for guideline-directed initiation of sacubitril/valsartan. Secondary endpoints will include reasons for not initiating sacubitril/valsartan when indicated and opportunities to titrate dosing. Appropriate candidates receiving sacubitril/valsartan will be compared to those who are not. Data points collected will include patient demographics, vital signs, laboratory data, heart failure exacerbations within the past 6 months, allergies to renin-aldosterone-angiotensin-system inhibitors, ejection fraction, New York Heart Association class, medication cost considerations, and concomitant heart failure medications the patient is prescribed. If applicable, the reason for lack of sacubitril/valsartan therapy initiation will also be collected. Continuous variables will be analyzed with t-test, and categorical variables with either Chi-square or Mann-Whitney U.

Results: Resident results in progress.

Conclusions/Implications: Resident results in progress.

37-Dosing Patterns of Direct Oral Anticoagulation in Patients with Non-Valvular Atrial Fibrillation in an Outpatient Clinic Setting. Duran N, University of New Mexico Hospital, Boomershine V, Banner Health. Email: NLDuran@outlook.com

Objective: The primary objective of this study was to characterize dosing patterns of direct oral anticoagulants (DOACs) in patients with non-valvular atrial fibrillation over time by assessing their dosing at their first and last clinic visit encounter. The DOAC doses were categorized as “recommended dose” or “alternative dose” according to the manufacture package labeling and patient age, weight, serum creatinine, and renal function. The secondary objective was to determine patient specific characteristics (CHA2DS2-VASc score, ATRIA score, renal function, antiplatelet use, or practice site), associated with alternative dosing. Given the data supporting the safety and efficacy of direct oral anticoagulants in the prevention of embolism related to non-valvular atrial fibrillation, guidelines have been updated and the utilization of these agents has increased. Studies have assessed the DOAC doses that patients have been initiated or discharged on, however, there is little to no data assessing how dosing patterns are impacted over time when managed in an outpatient clinic setting.

Methods: This is a large retrospective, cohort study using electronic health record data between January 1, 2013 and November 1, 2018. Patients included were at least 18 years of age, diagnosed with non-valvular atrial fibrillation, on DOAC therapy within the study period, and seen at a primary care or cardiology clinic within the same health system, with at least two clinic visits during the study period. Descriptive and inferential statistics were utilized for the study. Continuous variables were compared using student t-test and categorical variables were compared using a chi-square test. Multivariate logistic regression models and odds ratios were used to analyze the patient characteristics and dosing categories. The level of significance was set with alpha equal to 0.05.

Results: A total of 2820 patients were included in the study. There was a difference in patients on recommended DOAC dosing at the first clinic visit encounter (79% vs 21%; 95% CI: 55 to 60%, $P<0.001$) and at the last clinic visit encounter (78% vs 22%; 95% CI: 55 to 59%, $P<0.001$). Patients alternatively dosed were more likely to be under dosed. Alternatively dosed patients at the first and last clinic visit were also more likely to be females, older, prescribed rivaroxaban, have a history of severe renal disease, or have a history of anemia.

Conclusion: The study characterized several differences in non-valvular atrial fibrillation patients who were taking direct oral anticoagulants over time and identified characteristics associated with a higher risk for alternatively dosing. Given that patients alternatively dose were more likely to be under dose, these patient’s may be at a higher risk for stroke. Education/decision support tools should be taken in to consideration in hopes of optimizing clinical care and outcomes. Future studies evaluating the outcomes of alternative dosing would further solidify the importance of appropriately dosing direct oral anticoagulants.

38-Patient Perceptions of Pharmacists’ Independent Prescriptive Authority in a Community Pharmacy-Based Hypertension Management Program. Harvey M, Hamper J, Oler E, Hoover J, Albertsons Companies, Cleveland K, Spann N, Idaho State University.

Email: michael.harvey@albertsons.com.

Objective: The objective of this study is to determine patients' confidence in community pharmacists utilizing independent prescriptive authority to manage hypertension. Hypertension is one of the leading risk factors for cardiovascular disease. According to a recent 2018 report from the American Heart Association, there are approximately 103 million adults in the United States who have been diagnosed with hypertension and approximately 50% of those patients are not being controlled with their current therapy. This represents a gap in care that community pharmacists are uniquely positioned to impact. On July 1st, 2019, Idaho approved expanded prescriptive authority for pharmacists. This expanded authority removes barriers that would have previously prevented pharmacists from managing therapy for chronic disease states such as hypertension. Under the new law, pharmacists are able to adjust doses and add or remove therapies for patients with chronic disease states as long as they are following a protocol based on clinical guidelines or evidence-based research. Thanks in part to an expanded scope of practice and prescribing abilities in Idaho, community pharmacists can now enjoy the ability to utilize their clinical judgement to mirror what we have already seen in other pharmacy practice settings. Community pharmacists can now take on larger roles in chronic disease state management to address this growing gap in care. This allows community pharmacists to have a greater impact on the increasing number of patients that are being diagnosed with hypertension.

Methods: This is an observational study that will be submitted to Idaho State University's Institutional Review Board for approval. The study population will include patients diagnosed with hypertension who fill their hypertension prescriptions at chain community pharmacies located in grocery stores. All pharmacies involved will be part of the same chain. Surveys will be placed with patient's medications when the prescriptions are filled and ready for pick-up. The survey will then be explained and offered to patients at the pick-up window. Patients who chose to fill out the survey, will do so on their own without help from pharmacy staff. The survey will assess patients' confidence in community pharmacists independently prescribing and adjusting medications to manage hypertension. The survey will assess patient confidence using questions with a five-point Likert scale. In addition to addressing patient's perceptions of pharmacists, the survey will collect information regarding factors that may impact the patient's blood pressure and blood pressure goals. Descriptive statistics will be used to compare data. Overall patient response rates will be reported.

Results: Pending data collection and analysis.

Conclusion: Analysis of results is pending. Positive results could lead to the development of a new service for community pharmacists.

39-Implementation of a Community Pharmacy Intervention to Reduce Cardiovascular Risk in Patients with Hypertension. Hostert B, University of Iowa -Greenwood Pharmacy, Witry M, Veach S, University of Iowa, Nichols R, Greenwood Pharmacy. Email: brianna.hostert@gmail.com.

Objective: This innovative practice pilot program aims to implement a comprehensive cardiovascular care program at an independent community pharmacy. The end goal is to decrease ASCVD ten-year risk and provide the best evidence-based care for patients at risk of experiencing a major cardiovascular event such as heart attack or stroke. Assessing the feasibility and impact of this pilot will be the main focus. Objectives are to: 1) describe the number and types of pharmacist recommendations for cardiovascular risk reduction in addition to prescriber and patient responses, 2) measure the amount of time it takes for pharmacists to complete interventions, 3) assess the impact of the intervention on ten-year atherlosclerotic cardiovascular disease risk (ASCVD).

Methods: This pilot will be conducted at an independent community pharmacy. The pharmacy has access to electronic health records (EHRs) at three local healthcare systems. Additionally, the pharmacy is participating in a value-based pharmacy practice pilot program with a commercial insurance company. The intervention process is as follows: Targeted patients include adults 18 and older who are insured by the insurance company leading the value-based pilot. Patients must also have hypertension as one of their top-five most costly diagnoses as identified by the insurer. Patients will be contacted by phone to set-up an appointment to meet with the pharmacist at the pharmacy to complete the intervention face-to-face. The visit will include: measurement and assessment of hypertension, assessment of cholesterol management, assessment of current smoking status and current aspirin use if patient has a history of ASCVD. Lipid panels will be documented from data in patients' EHR or by contacting providers' offices if necessary. All other data, including current medications and current blood pressure will be collected during the visit. Ten-year ASCVD risk will be calculated. Based on these assessments, recommendations addressing treatment gaps discovered during patient visit will be made to the patients' primary care provider via fax using guidelines for primary and secondary prevention of ASCVD. If no prescriber response is returned, a follow-up phone call will be made one week later. Follow-up patient visits will be completed at least one month following the initial intervention following the same process as the initial visit. The time pharmacists spend contacting patients, gathering patient data, meeting with patients and making recommendations to providers will be documented. Numbers and types of recommendations made to providers and patients will be described in addition to acceptance rate. Reasons for both patient and provider denial of pharmacist recommendations will be documented if known. Change in ten-year ASCVD risk from pre-to post-intervention will be calculated. Documentation of both the initial and follow-up visit will be completed via a pharmacist eCare plan.

Results: Research in progress.

Conclusion: Data collected during this pilot may be useful to help guide community pharmacists to make efficient and meaningful interventions to reduce patients' cardiovascular risk

40-Evaluation of Pharmacist Recommendation for Medication Optimization in Heart Failure with Reduced Ejection Fraction (HFrEF). Huntsman R, Smith J, Purdue University. Email: rhuntsma@purdue.edu.

Objective: Heart failure (HF) is historically one of the top admission diagnoses in adults acutely admitted to the hospital. Per the American College of Cardiology (ACC), guideline-directed management and therapy (GDMT) of HFrEF has been established due to proven reduction of mortality and hospitalization risk with medications such as beta-blockers (BB) and those that inhibit the renin-angiotensin system. Pharmacists have the opportunity to ensure patients are being optimally treated with these medications to receive maximum benefit. This student led-program was designed to identify pharmacist intervention opportunities for patients not currently receiving guideline recommended medication therapy for the management of their HFrEF per the current ACC/AHA recommendations.

Methods: This is a retrospective chart review over May 15, 2019 to August 27, 2019 in a retail pharmacy associated with a community health-system. Eligibility criteria included all patients who filled a BB at the pharmacy during the study period. Exclusion criteria included patients with a recent left ventricular ejection fraction (LVEF) of greater than 40%, and patients without a recent echocardiogram or history of HFrEF. Chart analysis was done for all eligible patients to determine beta blocker and dose and presence of an ACE-I or ARB. Analysis showed four areas of pharmacist intervention: need to switch to a guideline recommended beta blocker (metoprolol succinate, carvedilol, bisoprolol), need to titrate appropriate beta blocker to guideline recommended target dose, need to add an angiotensin converting enzyme inhibitor (ACE-I) to current regimen, or need to add an angiotensin receptor blocker (ARB) to current regimen due to patient being ACE-I intolerant . Intervention letters for each intervention type were drafted and sent to physicians. The primary outcome was to identify the efficacy of pharmacist interventions based on the results of the intervention letters. Analysis of the results of the pharmacist interventions will take place until the end of January.

Preliminary Results: Overall, 24 total interventions were identified and letters were sent to physicians to recommend these changes. Charts for 380 total patients were evaluated and 35 patients were included for further analysis. 7/35 (20%) patients were not on a guideline recommended beta blocker. 13/35 (37.1%) were not on the target dose of a guideline recommended beta blocker and did not have documentation in their chart supporting the subtherapeutic dose. 6/35 (17.1%) of patients were not on an ACE-I/ARB and did not have documentation in their chart supporting their absence in therapy. Of those 6, 3 (50%) patients needed to be started on an ACE-I and 3 (50%) needed to be started on an ARB due to documented ACE-I intolerance.

Conclusions: N/A

41-Assessment of a Standardized Patient Evaluation, Education, and Recommendation Process and Its Effect on Statin Therapy Gaps in Care. Johnson K, Kroger Health. Email: kimberly.johnson2@stores.kroger.com.

Objective: Per the 2018 ACC/AHA Multisociety Guideline on the Management of Blood Cholesterol, patients with clinical atherosclerotic cardiovascular disease (ASCVD), diabetes, and certain risk factors and risk enhancers are at higher risk for developing ASCVD. Statin therapy not only lowers cholesterol levels but also has the benefit of reducing the number of major cardiovascular events in these patient groups. Earlier this year, the Patient and Provider Assessment of Lipid Management (PALM) Registry surveyed over 5600 statin-eligible adults and documented that over 26% of these adults recommended for statin therapy were not on treatment. Of those, nearly 60% report never being offered a statin, 30% discontinued treatment, and 10% declined treatment. The fear of side effects and perceived side effects were the most common reasons for declining or discontinuing a statin. Patient willingness to try or retry a statin was relatively high as 68% of those never offered, and 60% of those who discontinued a statin, would consider initiating a statin. The purpose of this study is to assess a standardized patient evaluation, education, and recommendation process and its effect on statin therapy gaps in care.

Methods: Prospective cohort study utilizing a skip-logic survey for pharmacists at three locations of a nationwide retail pharmacy chain to document patient answers to structured evaluation and patient education. Eligible patients with diabetes or possible cardiovascular disease who are not currently on statin therapy will be predetermined using a proprietary clinical interventions queue. These patients will be asked to speak with a pharmacist in person or via telephone to answer a series of screening questions that incorporates a brief statin education session and a possible recommendation for statin therapy. Included will be a question to determine participants' acceptance or decline of the recommendation. Follow-up will be done by the principal investigator to document if initiation of statin therapy occurred. The control data will consist of non-identifiable data pulled from a separate location that has not undergone training for this process.

Results: Research in progress.

Conclusion: Research in progress.

42-Differences in Guideline-Driven Versus Routine Clinic Blood Pressure Measurement. Lapin J, Peysakhova G, Trivedi V, Wood M, Link D, van de Rijn J, , Lu X, Yu D, Temple University. Email: tue53713@temple.edu.

Objective: An integral part of the assessment and diagnosis of hypertension is appropriate blood pressure (BP) measurement. The

2017 American College of Cardiology/American Heart Association (ACC/AHA) BP Guidelines includes steps to determine an accurate blood pressure measurement; however, the logistical constraints of clinic practice often limit their use. In this study, we sought to determine if there was a measurable difference between BP measurements obtained using a guideline-driven protocol versus clinic standard practice of care in hypertensive patients. Secondary endpoint assessed if changes were made to medication therapy.

Methods: This was a prospective cohort study of patients who presented to the internal medicine clinic. Routine clinic BP was measured by the office staff using an automated blood pressure device. Afterwards, in a private room we measured BP using a guideline-driven protocol with Omron HEM 907 oscillometric monitor as in SPRINT. Pertinent information was obtained from patients' medical records and office staff BP measurement technique was observed.

Final Results: We screened 138 patients, enrolled 85, and analyzed 74 who met criteria. The mean (SD) clinic collected BP measurement was 150.0 (17.1)/86.2 (12.3) mmHg, whereas mean (SD) guideline-driven BP measurement was 141.5 (20.4)/84.7 (14.3) mmHg. There was an average difference of 8.5 (13.8) mmHg, a statistically significant decrease in systolic BP obtained by research grade protocols vs standard clinic practice ($p<0.001$). Of the patients analyzed in the study, 29 (39.2%) had a change in their BP management. However, after expert review using guideline-driven BP measurement, 27.6% and 44.8% of these 29 patients were found to not require an adjustment per ACC/AHA and JNC8 guidelines, while additional 21.6% and 14.9% did require treatment adjustment. There were 24 cases where the management decision based on guideline-driven BP measurement disagreed with routine measurement, yielding a total of 32.4% discordant rate between treatment changes resulted from standard clinic practice vs research grade protocols, respectively. Common discrepancies during routine clinic BP measurement included: improper positioning, absence of arm circumference measurement, and reliance on a single measurement.

Conclusions/Implications: These results suggest that there is a significant difference in the quality of BP measurements acquired using research driven protocols and that providers acting upon inaccurate blood pressure information obtained from standard clinic measurements may lead to unwarranted medication adjustment in a sizable portion of patients.

43-Interprofessional Collaboration Between Physicians and Pharmacists to Manage Atherosclerotic Cardiovascular Risk in Patients with Diabetes. McCutcheon L, St. Luke's Family Medicine Residency, Wilkes University, Nemeth A, Milton S. Hershey Medical Center, Kelly J, Giant Food Store, Germinal G, Humphrey C, Baig S, Donovan P, Hall S, Sharma R, Te T, St. Luke's Family Medicine Clinic. Email: livia.mccutcheon@wilkes.edu.

Objective: The 2013 ACC/AHA guideline on the treatment of high blood cholesterol presented four groups of patients who are indicated for statin therapy. These include patients with clinical ASCVD, an LDL-C of at least 190 mg/dL, aged 40-75 years with diabetes and an LDL-C of 70-189 mg/dL, and aged 40-75 years with an estimated 10 year ASCVD risk of at least 7.5%. The objective of this study was to evaluate if patients with diabetes at a family medicine clinic have been receiving appropriate statin treatment for their atherosclerotic cardiovascular risk.

Methods: We collected data from February 2018 to June 2018 for 462 patients. Data collected included statin use and appropriate dose. ASCVD risk was calculated using the American College of Cardiology's ASCVD risk estimator. Data were analyzed to evaluate if current treatment adheres to the guideline, and interventions were identified.

Preliminary Results: Mean age was 62.1 years (range of 18 – 97 years). The majority (70%) of patients were currently prescribed a statin. Some of the reasons for lack of statin in other patients included age, statin allergy, and abnormal liver function. Of the patients on a statin, the majority (64%) were on an appropriate dose. Some of the reasons for inappropriate dose included ASCVD risk not properly considered, clinical ASCVD not properly considered, and previous adverse event. We identified the need for the following interventions: increase to a high intensity statin (N=74), initiate statin (N=65), and weigh risk vs. benefit of statin therapy (N=30). Clinical recommendations were submitted to the patients' primary care provider for consideration and data collection/analysis on whether they were accepted are in progress.

Conclusions/Implications: While the majority of patients were prescribed an appropriate statin therapy per 2013 ACC/AHA guideline, there is a considerable opportunity for improvement. This was our first joint project in which pharmacists and physicians collaborated as part of an interprofessional primary care team. We hope to improve this and other value based measures by continuing to collaborate as an interprofessional family medicine office.

44-Impact of a Community Pharmacy-Based Initiative to Increase Patients Ability to Recognize Heart Failure Symptoms and Improve Self-Management. Pierini S, Alexander L, Hakala G, Hamper J, Albertsons, Proteau R, Oregon State University, Singh H, Oregon Health and Science University. Email: samuel.pierini@albertsons.com

Objective: Chronic heart failure (HF) represents a significant and growing burden for patients and communities on a local and global scale. Current guidelines promote a multidisciplinary approach to HF care, including pharmacy. However, the majority of current data focus on the role of pharmacists in transitions of care or in other clinical settings. Limited data are available characterizing pharmacists' ability to impact HF outcomes in a community pharmacy setting in the United States. Community pharmacists are uniquely positioned to educate and improve the health of HF patients. Pharmacists are familiar with patients' medication lists and often have established patient relationships, which further promote their ability to educate HF patients. If early signs of worsening HF are detected pharmacists can direct patients to their primary care provider, allowing symptoms to be addressed before inpatient

intervention is required. Reducing hospital admissions will improve patients' quality of life, decrease risk of mortality, and reduce the substantial cost burden associated with HF hospitalizations. This study describes an innovative strategy for improving HF-related care by supporting pharmacists' ability to educate HF patients in the community setting. Objectives: The primary objective of this study is to increase HF patients' capacity for self-care and identification of signs and symptoms of worsening HF. To achieve this objective we will implement a new community pharmacy-based educational initiative for HF patients. To support this activity we will develop and implement a training program targeted at increasing pharmacists' capacity to counsel patients on HF self-care, medication adherence, and detection of worsening HF.

Methods: Patients will be identified using a National Drug Code report corresponding to a prescription for furosemide, torsemide, bumetanide or metolazone as well as at least one guideline approved medication for heart failure including an angiotensin converting enzyme inhibitor, angiotensin II receptor blocker, an approved beta blocker, an aldosterone antagonist or sacubitril/valsartan in the last one year. Patients age 18 age or older who self-identify a diagnosis of HF will be included in the study. Patients who refuse this service will be excluded from the study. Pharmacists will be trained to educate patients on self-care and medication adherence strategies. The training will consist of web-based tutorial sessions and a live cased-based interactive workshop. Training will include pathophysiology of HF, common signs and symptoms of worsening HF, and treatment options. Data will be collected from both patients and pharmacists. Pharmacist competency and confidence will be assessed prior to patient education using pre-training and post-training surveys. Once patient education begins, longitudinal interviews will be performed to evaluate patients' knowledge of HF-related self-care, medications, and signs and symptoms of worsening HF. Descriptive statistics will be used to summarize pharmacist and patient responses. Changes in Likert-scale responses will be assessed using the Wilcoxon Rank-Sum test, and responses to open-ended questions will be coded and summarized as pertinent themes. Changes in knowledge and competency will be assessed using paired t-tests, both overall and by domain.

Preliminary Results: Not yet available.

45-Implementation of a Pharmacist-Led Cardiovascular Risk Reduction Service in a Community Health Center Serving Patients with HIV who are Predominantly Mexican-American. Quijano P, Lambeth K, Centro de Salud Familiar La Fe, Inc. Email: pquijano@utep.edu.

Objective: The purpose of this project is to implement a cardiovascular risk reduction (CVRR) service for a predominantly Mexican American population with HIV who are at risk for cardiovascular disease (CVD) at the community health center (CHC) and community pharmacy. In this new service, community-based pharmacists will be able to expand the existing disease state management protocol to streamline a process of continuously 1) identifying, 2) evaluating, and 3) managing CVD risks in the HIV population. To build a sustainable process, an active CVRR surveillance system and patient education will be developed and piloted at both the CHC and in the community pharmacy. Effective Anti-retroviral therapy (ART) therapy has prolonged the life expectancy of people living with HIV. In 2019, American Heart Association (AHA) stated the global burden of HIV-associated CVD has tripled over the past two decades due to the combination of traditional CVD risk factors, HIV infection, and ART-specific contributory factors. AHA found an underestimation of CVD risk and potential under-treatment among individuals with HIV infection. In addition, healthcare-related disparities have been reported with fewer statin prescriptions among Hispanic patients than their white counterparts.

Methods: Community-based pharmacists at the CHC will implement the CVRR service with providers under a state-approved collaborative practice agreement (CPA) to manage medication therapy and cardiovascular risk for patients with HIV. An ASCVD risk-assessment multidisciplinary team will be assembled to oversee the development and implementation of this service and update the CPA to include AHA's cardiovascular risk assessment algorithm (CVRAA) for appropriate risk-reduction therapy. To identify patients, 1) reminder alerts will be implemented in the EHR for providers and in the pharmacy dispensing software to trigger a cardiovascular risk reduction evaluation. In the clinic, fifty patients with controlled HIV on ART will be randomly identified by chart reviews conducted over a one-year span (September 2018-August 2019) with the goal to conduct thirty follow up patient appointments. These patients will then be evaluated by 2) classifying patients' risks into a low/moderate-risk group or high-risk group depending on their HIV-related CVD risk-enhancing factors. Finally, 3) the treatment approach will occur during patient follow-up appointments which may consist of changes in pharmacotherapy under protocol. Patients will also be educated on lifestyle modifications and the hyper-inflammatory state of HIV infection that contributes to a higher risk for CVD. Patient education at the community pharmacy will consists of cardiovascular health information included with patient's medication. If a patient identifies as a smoker, a smoking cessation starter pack and a referral for pharmacy smoking cessation services will be offered.

Results: Project in progress.

Implications: Project in progress.

46-Assessment and Evaluation of Adverse Drug Reactions and Drug-Drug Interactions Among Hypertensive Patients in a Secondary Care Hospital in the United Arab Emirates. Rao P, Rabbani S, RAK College of Pharmaceutical Sciences, Alkaabi M, Ali S, Dibba Hospital. Email: padma@rakmhsu.ac.ae.

Objective: Patients with hypertension are particularly susceptible to many drug related problems such as adverse drug reactions and drug-drug interactions due to a number of factors like age, comorbid conditions, polypharmacy, and long hospital stay. The aim of the study was to assess the incidence and nature of adverse drug reactions (ADRs) and potential drug-drug interactions (pDDIs) among

hypertensive patients in a secondary care hospital in the United Arab Emirates (UAE).

Methods: It was a prospective, observational study carried out in 88 adult hypertensive patients presenting to the inpatient department of Dibba Hospital, Fujairah, UAE. All the adult patients of either gender with hypertension and on antihypertensive drugs admitted at the inpatient department of the study site were included in the study. Patients with malignant hypertension, significant renal and hepatic diseases, and pregnancy were excluded. The study was conducted for a period of 6 months from December 2017 to May 2018. Demographic and clinical data were collected from electronic patient case records and documented. All clinical ADRs noted by physician and reported by patients were documented and assessed for causality, severity, predictability and preventability. The occurrence of any pDDIs between medications received by the patients were identified using Micromedex database 2.0 and graded and documented based on the severity and documentation as specified in the database.

Results: During the study period, a total of 22 ADRs were reported in the study population with an incidence rate of 25%. Ankle edema (n=6, 27.3%) was the most frequently reported ADR, followed by dry cough (n=5, 22.7%), hyponatremia, dizziness and headache (n=2, 9%) each. Majority (n=12, 54.5%) of the ADR were probable, moderate in severity (n=9, 40.9%), preventable type (n=13, 59.09%). Amlodipine (n=10, 45.4%) was the most common antihypertensive responsible for causing ADRs, followed by perindopril (n=7, 31.8%). A total of 80 pDDIs of major severity type were identified in the study population.

Conclusion: The majority of suspected ADRs were probable, moderate in severity and preventable type. The majority of the pDDIs were of major severity type, fair documentation grade, and not specified onset. The clinical pharmacist can participate in monitoring of possible ADRs and DDIs, along with other health care professionals.

47-Risk Factors for Cardiovascular Disease After Community-Based, Pharmacist-Led Weight Loss Program Focused on High-Protein Diet. Rea K, Nadpara P, Goode J, Virginia Commonwealth University, Jadallah J, Buford Road Pharmacy. Email: reakb@vcu.edu.

Objective: An independent community pharmacy implemented a pharmacist-led weight loss program (Ideal Protein ®) focusing on a low-calorie, high protein, low-carbohydrate diet to help patients lose weight and improve cardiovascular risk factors. The objective of this study was to evaluate the effect of a community pharmacist-led protein-based weight loss program (Ideal Protein ®) on clinical outcomes that impact cardiovascular disease and the American Heart Association (AHA) Life's Simple 7 Score.

Methods: This retrospective analysis will be conducted at an independent community pharmacy in Richmond, Virginia that implemented a pharmacist-led weight loss program focusing on a low-calorie, high-protein, low-carbohydrate diet (Ideal Protein ®). Electronic pharmacy patient records will be accessed to obtain the following baseline information: age, comorbid conditions, usual diet, usual physical activity, smoking status, the date the program was started, and the date the program was completed. Clinical cardiovascular outcomes (blood pressure, A1c, lipid profile, weight, and waist circumference) will be compared from baseline and at the completion of the program. An AHA's Life's Simple 7 Score will be calculated for the patient at the beginning and compared to the score at the completion of the program. Paired t-test will be used to analyze data.

Results: Research in progress.

Implications/Conclusion: Research in progress. The retrospective analysis of the new service will provide insight into the effectiveness of the program.

48-Remote Blood Pressure Monitoring on Hypertension Management in an Employer-Based Health Center. Sagar S, University of South Carolina, Martin L, Center for Living Well – Disney. Email: sonam.sagar@premisehealth.com.

Objective: Aspirin has been one of the mainstays of cardiovascular disease (CVD) prevention since the early 1980s, with an estimated 40% of Americans over age 50 taking aspirin for primary prevention of CVD. Recent studies show evidence against using low dose aspirin for this purpose as its anti-thrombotic benefits are offset by the increased risk of major bleeding events. Specifically, the ASPREE trial showed that aspirin use in the elderly did not have a significant effect on cardiovascular outcomes and had a significant increase in major hemorrhage. New ACC and AHA guidelines now recommended reserving aspirin for patients with the highest cardiovascular risk. Its routine use is not recommended for primary prevention in patients older than 70 years old or those with an increased bleeding risk. The objective of this project was to evaluate patients 70 years and older taking aspirin daily at a family medicine practice, determine whether they were taking it for primary prevention and recommend discontinuation for primary prevention.

Methods: This was a quality improvement project designed to contact elderly patients on aspirin for primary prevention and recommend discontinuation as appropriate. Patients were identified through generation of a report and retrospective chart review of all patients on aspirin in a family medicine practice. Patients were included if they were 70 years of age or older and taking aspirin daily. Those who met criteria for secondary cardiovascular prevention were excluded. The remaining patients were contacted via telephone by a student pharmacist, using a script, to evaluate aspirin use and indication, inform patient of guideline changes and recommend discontinuation. Patient responses were documented and medication lists were updated in the electronic health record. Outcomes recorded were the indication for aspirin, whether patients stopped or continued aspirin, and reasons patients decided not to stop aspirin. As a part of this project, clinical staff were educated on aspirin recommendations and calls to patients. IRB approval was not necessary, as this was a quality improvement project as a part of normal clinical operations.

Preliminary/Final Results: 244 patients over age 70 and taking aspirin were identified. 68 (27.9%) were identified as primary prevention and 176 (72.1%) were identified as secondary prevention. 30 (44.1%) were males and 38 (55.9%) were females and the average age was 76.5 years. 63 patients were contacted via telephone. 53 out of 63 patients contacted (84.13%) discontinued use of aspirin after the intervention and 10 continued use, most often citing a desire for a discussion with another healthcare provider as a reason to continue on aspirin.

Conclusions/Implications: The high rate of patients that stopped aspirin is indicative that this was a successful quality improvement project to improve adherence to recommendations for aspirin use in primary prevention. Future projects will be needed to evaluate and intervene on aspirin use in other patient populations.

49-Deprescribing Aspirin for Primary Prevention in the Elderly: A Student Pharmacist Initiative at a Family Medicine Practice. Thirkell C, Vega G, Houde K, Aierle S, Albany College of Pharmacy and Health Sciences -Vermont Campus. Email: cameron.thirkell@acphs.edu.

Objective: Aspirin has been one of the mainstays of cardiovascular disease (CVD) prevention since the early 1980s, with an estimated 40% of Americans over age 50 taking aspirin for primary prevention of CVD. Recent studies show evidence against using low dose aspirin for this purpose as its anti-thrombotic benefits are offset by the increased risk of major bleeding events. Specifically, the ASPREE trial showed that aspirin use in the elderly did not have a significant effect on cardiovascular outcomes and had a significant increase in major hemorrhage. New ACC and AHA guidelines now recommended reserving aspirin for patients with the highest cardiovascular risk. Its routine use is not recommended for primary prevention in patients older than 70 years old or those with an increased bleeding risk. The objective of this project was to evaluate patients 70 years and older taking aspirin daily at a family medicine practice, determine whether they were taking it for primary prevention and recommend discontinuation for primary prevention.

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Conclusions/Implications: The high rate of patients that stopped aspirin is indicative that this was a successful quality improvement project to improve adherence to recommendations for aspirin use in primary prevention. Future projects will be needed to evaluate and intervene on aspirin use in other patient populations.

50-Remote Blood Pressure Telemonitoring with a Standardized Treatment Protocol for Hypertension Management: Exploring Patterns of Protocol Adherence. Woods J, Zhang Y, Stasher S, Summers R, Clark D, University of Mississippi. Email: jswoods@umc.edu.

Objective: We conducted a prospective pilot study evaluating remote hypertension management using home blood pressure (BP) telemonitoring and pharmacist medication titration using a standardized treatment protocol. This analysis explores patterns of treatment protocol adherence and factors contributing to protocol deviation in this study.

Methods: Patients at the University of Mississippi Medical Center with uncontrolled hypertension, defined as two office-based BP measurements greater than 140/90 mm Hg in the preceding 12 months, were eligible for study inclusion. Eligible patients were mailed a telemonitoring kit including an iPad tablet and wireless BP cuff with Bluetooth capability. Patients were instructed to obtain daily BP measurements and scheduled BP reviews occurred every three weeks throughout the six month program duration. At each BP review, pharmacist led antihypertensive medication titration occurred according to an evidence based treatment protocol to target a goal average BP less than 130/80 mm Hg. The treatment protocol was based on recommendations in the 2017 American Heart Association/American College of Cardiology guideline for hypertension management. The protocol utilized a baseline antihypertensive regimen including three primary drug classes: 1) thiazide diuretics, 2) angiotensin converting enzyme inhibitors/angiotensin receptor blockers, and 3) calcium channel blockers. Antihypertensive medications were adjusted according to individual patient characteristics, medication interactions, adverse effects, and drug allergies. Appropriate laboratory monitoring of electrolytes and renal function was also conducted. Additional medication classes including mineralocorticoid receptor antagonists, beta blockers, and vasodilators were implemented as needed, including for those with resistant hypertension. All medication changes and management decisions deviating

from protocol were documented at each review.

Preliminary Results: Among 90 enrolled patients, all participated in study on-boarding, including medical history and medication reconciliation with the pharmacist. To date, 683 total BP reviews have occurred, 107 (15.7%) reviews where BP was at goal and no antihypertensive medication was indicated, 325 (47.6%) where antihypertensive medication was up-titrated according to protocol, 49 (7.2%) where insufficient BP data was available, and 202 (29.6%) where management deviated from protocol. Factors contributing to protocol deviation included patient preference (23.2%), inability to contact patient (6%), pending lab work (5.2%), concern for low BP (6%), technical issues (3.6%), non-adherence to BP medications (2%), and other miscellaneous reasons (28.4%).

Conclusions/Implications: Remote BP telemonitoring with pharmacist-led antihypertensive medication adjustment often requires deviation from a pre-specified treatment protocol. These findings highlight the importance of flexible treatment protocols in a real-world setting, and inform development of future protocols to optimize management and patient engagement.

Care of Underserved

52-The Impact of Transgender Didactic Coursework on Students' Knowledge, Empathy, and Comfort in Educating Health Care Professionals on the Delivery of Transgender Medical Care. Bingham J, Bailey J, Shenandoah University. Email: jbingham162@su.edu.

Objective: A survey by the National Center for Transgender Equality published in December 2015 found that 1 in 3 U.S transgender persons had at least one negative experience during a healthcare visit, such as harassment, refusal to treat, or a situation where the transgender person had to teach the provider about transgender patients. This study aims to assess and measure changes to third-year pharmacy students' knowledge of the transgender patient, empathy in providing meaningful care to the transgender community, and comfort in educating members of a health care team related to providing appropriate transgender medical care.

Methods: Third-year pharmacy students of the Shenandoah University School of Pharmacy were administered qualitative, descriptive pre-and post-surveys one week pre-and four weeks post-participation in an active learning classroom module focused on introducing and improving knowledge related to the transgender patient population. The goal of the pre-and post-surveys was to assess and measure changes of the primary objectives. The survey consisted of thirteen questions that inquired about the student's awareness of the transgender community, knowledge of resources for transgender patients, and descriptions of the student's willingness to advocate on behalf of transgender patients within the healthcare team. Data collected was evaluated for patterns of changes in the above stated measures utilizing SPSS.

Preliminary Results: To measure students' knowledge of the transgender population, the survey included a question assessing the students' knowledge of gender affirmation. Prior to the survey, 69% (n=38) recognized what gender affirmation entailed as compared to 92.7% (n=51, $p = 0.001$) following the module. The students' knowledge of available resources to assist transgender patients increased from 16.4% to 56.4% (9 vs. 31 students, $p < 0.000$). Prior to the module, 40% of students stated they were comfortable in educating other providers on evidence-based care of transgender individuals, whereas 67.3% (22 vs. 37 students, $p = 0.001$) were comfortable following the module. A common theme that students' reported as contributing to their lack of comfort was their lack of knowledge of the transgender population and awareness of available evidence-based guidelines. Most students in both the pre-and post-survey stated a willingness to advocate for the appropriate and empathetic care of the transgender population within their healthcare team (94.5% vs. 96.4%, no significant difference).

Conclusions: In order to improve the quality of healthcare that transgender patients receive, it is important to increase student knowledge of the transgender population, as well as the students' ability to effectively utilize available resources to aid in the delivery of empathetic medical care. This study suggests that integration of transgender healthcare coursework in a pharmacy curriculum may contribute to an increase in the necessary knowledge, as well as an increase in comfort in educating the healthcare team in transgender care. Furthermore, the data demonstrates the need to include transgender therapeutics in pharmacy curriculums to improve delivery of transgender patient care.

53-Implementation of a Healthy Hearts Community-Based Intervention to Increase Cardiovascular Risk Awareness. Bloodworth L, Ross L, Woods J, University of Mississippi, Ward A, Mississippi State Department of Health. Email: Lbloodworth@umc.edu.

Objective: The main objective of this project is to utilize pharmacists, pharmacy residents and student pharmacists in the community to improve identification and management of modifiable CVD risk factors among vulnerable populations. Cardiovascular disease (CVD) has many modifiable risk factors and is the leading cause of death in the United States and Mississippi, accounting for over one-third of all deaths. Mississippi has the highest CVD mortality rate in the nation.

Methods: The University of Mississippi, School of Pharmacy partnered with the Mississippi Community Education Center, the Jackson Medical Mall Foundation, and several community pharmacies from November 2018 to September 2019 to conduct CVD screenings and education. The following parameters were assessed: systolic (SBP) and diastolic blood pressure (DBP), cholesterol panel (LDL, HDL, TC, TG), blood glucose, hemoglobin A1c (if diabetes present), and body mass index. Weekly education on cardiovascular risk prevention, medication adherence, and healthy lifestyles was provided. Participants with identified CVD were offered comprehensive medication management and health coaching. Follow-up encounters occurred 30 days via telephone and 90 days in person for repeat clinical measures.

Results: Health screenings were hosted at 99 locations and 1181 patients received services from November 2018 through September 2019. Baseline measures indicate average age of 50 years, BMI 31 kg/m2, 142 mmHg SBP, 77 mmHg DBP, 190 mg/dL total cholesterol, 108 mg/dL LDL, 42 mg/dL HDL, 149 mg/dL TG, and minimal knowledge of CVD and nutrition. 666 patients have attended at least 1 education class. To date, 216 participants have been referred for comprehensive medication management. Baseline knowledge of CVD and nutrition has increased from 60% on pre-class survey to 98% on post-class survey.

Implications/Conclusions: With CVD as the leading cause of death in the area where the intervention occurred, preliminary results reveal improved access to health services, knowledge of CVD and modifiable risk factors including establishing control of clinical parameters in some participants. By identifying and managing risk factors, the hope is to improve CVD mortality rate in Mississippi.

54-Assessing Medication Adherence in Hispanic Type 2 Diabetes Patients in the Rio Grande Valley Attending Project SHINE. Edwards S, Matamoros A, Peña E, Rios A, Texas A&M University. Email: s.edwards@tamu.edu.

Objective: Regular screenings and appointments with providers are necessary to detect diseases, combat problems, and assure effective intervention. However, in South Texas and the Rio Grande Valley specifically, patients living with chronic diseases have less access to comprehensive healthcare and consequently experience disproportionately worse outcomes. In response to this, Project SHINE (Service and Help through Interprofessional Networking Experience) was developed by students from the Texas A&M Rangel College of Pharmacy in 2013 to provide easier access to regular screenings in this medically underserved area. This free health care service aims to assess medication adherence, identify potential barriers to adherence, and highlight potential opportunities for intervention through patient screenings, education, and counseling in order to improve health outcomes and elevate patient care in this underserved patient population.

Methods: Pending IRB approval, a 20-question hard-copy paper questionnaire (attached), available in English or Spanish, will be administered to those who consent to participate in Project SHINE, are 18 years or older, Hispanic, and from the Rio Grande Valley area; a cover letter detailing the purpose and voluntary nature of the study will also be provided. This questionnaire will measure overall medication adherence by incorporating a conceptual framework addressing seven areas: sociodemographics and social determinants of health; health literacy; self-efficacy; attribution theory; theory of reasoned action and theory of planned behavior; health beliefs; and medication use. Patient-specific barriers disclosed in these questions will help guide healthcare intervention. Name, date of birth, and other identifying information will not be collected. Data will be analyzed using a systematic rating system and descriptive statistics. During this event, patients will progress through student-led stations including: hypertension (blood pressure measurement), diabetes (blood glucose, A1c, and foot test evaluations), cholesterol (total or full lipid panel), BMI, patient questionnaire completion, and lastly, comprehensive counseling. At least one Spanish-speaking student will be present at each station to ensure accuracy of translated information. Participants will leave with a handout showing their readings and relevant information gained from counseling sessions.

Preliminary Results: Approximately 150 patients will be seen during this five-hour Saturday morning service located at a popular flea market in Brownsville, TX. Over twenty pharmacy students will be present to conduct the screenings and counseling sessions, and preceptors will be present to oversee all operations. Demographics, readings, and patient-reported adherence will be recorded to guide counseling points.

Conclusions/Implications: Providing free health screenings and educational counseling to Hispanic South Texas patients who may not have access to or be regularly seen by a primary care provider is one way to meet the needs of an underserved patient population. The implementation of this questionnaire at health fairs like Project SHINE will identify gaps in patient care according to patient-provided information such as medication adherence that pharmacists can specifically and effectively address within a healthcare team. With time and continued Project SHINE events, data can be compiled to identify common trends to improve health outcomes and elevate patient care through medication adherence in this underserved South Texas population.

55-Assessment and Treatment of Hepatitis C in a Federally-Qualified Health Center. Petrie J, University of Colorado. Email: jennifer.petrie@cuanschutz.edu.

Objective: The objective of the study is to implement a treatment service for patients with chronic hepatitis C virus (HCV) infection through an interprofessional collaborative care model in a Federally Qualified Health Center (FQHC). It is estimated that 2.4 million people are living with chronic HCV infection in the United States. The Health Resources and Services Administration (HRSA) identifies that many members of the underserved communities are at risk for or live with viral hepatitis.

Methods: A collaborative HCV treatment service has been developed and implemented by two primary care providers (PCPs) and one clinical pharmacist in an FQHC. Patients with a diagnosis of HCV may be referred to one of two PCPs for initial evaluation, including assessment of readiness for therapy, social history, HCV RNA genotype, liver fibrosis stage, HCV RNA quantitative levels, baseline labs, and consultation with a remote infectious disease specialist. Following test results, the clinical pharmacist identifies the optimal HCV treatment regimen, assesses medication interactions, ensures medication access, and addresses patient adherence throughout the course of treatment. Both the PCPs and clinical pharmacist collaboratively establish a follow-up care plan including monitoring parameters and assessment of sustained virologic response (SVR).

Preliminary Results: Over the past eight months, since implementation of the HCV treatment service, 29 patients have been referred

to the FQHC PCPs for evaluation. Upon review, three patients had an F4 fibrosis stage, indicating severe fibrosis, and were referred to a gastroenterologist for treatment. Two patients had an F0 fibrosis stage and will require a repeat HCV RNA quantitative level, after 6-months, to assess for spontaneous viral clearance prior to initiating pharmacotherapy. One patient declined HCV treatment. A total of 23 patients have been deemed as appropriate candidates for treatment through the collaborative service. Nine patients are currently receiving pharmacotherapy and 14 patients have completed HCV treatment. Of the 14 patients who have completed HCV treatment, seven patients had an undetectable HCV RNA in the serum 12 weeks following completion of treatment, indicating they have achieved SVR. The remaining seven patients are scheduled for assessment of SVR.

Conclusions/Implication:s Prior to implementation, all patients were referred to specialists outside of the FQHC for hepatitis C treatment. Providing collaborative HCV treatment services in an FQHC helps to reduce treatment costs and improves access to treatment for the underserved patient population. Expansion of services to additional clinics within the FQHC are in progress.

56-Improving the Health of South Dakotans Through Prevention and Management of Diabetes and Cardiovascular Disease (CVD): Perspectives of Native American Patients. Pinto S, Seiber M, Middendorf A, South Dakota State University. Email: sharrel.pinto@sdstate.edu.

Objective: This project will explore the barriers, challenges, and facilitators of chronic disease management (diabetes and CVD) and the patients' health care journey in Native American populations within South Dakota (SD) as they relate to medication therapy management (MTM) and the role of pharmacists in patient care. South Dakota has nine Tribal Nations which comprise roughly nine percent of the state's population. In SD, the percentage of Native Americans diagnosed with diabetes is twice that of the general adult population. Native populations in SD are also at a higher risk for CVD. Due to the unique healthcare aspects of Native Americans, the use of Indian Health Service (I.H.S.) facilities, and other social determinants of health impacting chronic disease management within Tribal Nations, it is vital to include this population and incorporate their perspective when assessing pharmacy practice and MTM in SD. Additionally, when tribal members are referred to or seek care from non-I.H.S. facilities, providers and pharmacists in these facilities are typically unaware of the factors impacting a treatment plan for their Native patients, ultimately leading to decreased adherence to treatment plans and increased health inequities.

Research Questions/Objectives: The project aims to explore various research questions pertaining to diabetes and CVD management, including what prompted patients to seek care for their disease, their experience with their healthcare team, their healthcare journey, their knowledge of pharmacist services, their knowledge of MTM services, barriers to successful disease management, challenges faced while managing their disease, and factors that facilitate and promote successful disease management. Specifically, documenting the health care journey of Native patients will provide practitioners and pharmacists with meaningful recommendations to provide the needed services to these patients. Asking these questions will highlight a unique population's perspective of pharmacists and disease management and provide a solid foundation for SD pharmacists at both I.H.S. and non-I.H.S. facilities to begin to more efficiently meet the needs of Native patients.

Methods: The project is currently in progress, with data collection being completed by January 2020. Participants are being recruited from two Tribal Nations in SD. After screening to ensure eligibility, participants will be assigned to one-on-one interviews or focus group sessions. Facilitation guides with questions covering the various areas described above will be used. Descriptive and qualitative analysis will be performed to identify themes, map the health care journey, and identify best practices for those working with this population.

Preliminary Results: Currently, tribal members utilizing I.H.S. facilities undergo a unique health care journey that is riddled with referrals and miscommunications. Tribal members seeking care outside of I.H.S. facilities face practitioners who do not have a firm grasp on how to best serve these patients. It is expected that Native patients in this project will face similar challenges and barriers to non-Native populations but will, perhaps, face more complex challenges in working within I.H.S. constraints. Additionally, study findings will help offer guidance to practitioners outside of the reservations, on best practices when working with patients from various Tribal Nations across the state of South Dakota.

57-Outcomes of a Pharmacist Chronic Kidney Disease Medication Evaluation Service for Diabetes Patients at a Nurse Practitioner-Managed Free Clinic. Roper S, Greer J, Misher A, Knight J, University of Georgia. Email: slroper@uga.edu.

Objective: The objective of this study is to assess the outcomes of a pharmacist team (clinical pharmacist and pharmacy students) chronic kidney disease (CKD) medication evaluation service for patients with diabetes at a nurse practitioner-managed free clinic. CKD is prevalent in 14.8% of the United States adult population. Diabetes and hypertension are the leading causes of CKD and are prevalent comorbidities among patients who are underserved. As patients' kidney function deteriorates, medication adjustments are necessary; however, due to time constraints and other barriers, changes are not always made to patient regimens. As medication experts, pharmacists hold a unique position to identify medication-related problems and perform the interventions that are needed to provide patient centered care. Evidence suggests the addition of a pharmacist to the multidisciplinary team within a physician-led clinic reduces medication related problems in patients with CKD. However, the benefit has yet to be evaluated in clinics led primarily by nurse practitioners. Nurse practitioners typically receive less pharmacotherapy training than physicians and may be more prone to miss medication-related problems in patients with CKD. Additionally, patients with diabetes and CKD tend to have complicated medication regimens which are difficult to assess quickly. In addition to medication related problems, our clinic has noted a lack of

documentation regarding CKD staging and referrals to nephrology for moderate, high and very high risk patients as outlined by the Kidney Disease Improving Global Outcomes (KDIGO) guidelines and our clinic specific protocol. We have developed a pharmacist service to address these medication and documentation related issues for patients with uncontrolled diabetes.

Methods: This study will include a retrospective chart review of patients with CKD and comorbid uncontrolled diabetes and will be conducted at a nurse practitioner-managed free clinic in Savannah, GA. Patients who had an appointment between June 1, 2018 and May 31, 2019 will be reviewed. All patients 18 years and older with uncontrolled diabetes will be included. Patients will be excluded if study data is missing. Patient demographics, staging of CKD, medication interventions made by the pharmacist and status of their acceptance, and the form of communication will be collected. Dose changes, medication discontinuation and addition of medication therapy will be noted. The primary outcome will be the percentage of patients requiring interventions made by the pharmacy team. Secondary outcomes will include type of interventions made by the pharmacy team, number of suggested nephrology referrals by the pharmacy team, percentage of patients with CKD stage documented, and percentage of patients with CKD stage documented appropriately.

Preliminary Results: A total of 62 patients have been identified for inclusion in the study. Preliminarily, approximately 63% (n=39) of the dataset has been reviewed. Of the patients reviewed, 18% (n=7) required a medication intervention. Fourteen patients were identified as high or very high risk; however, only 29% of those (n=4) had a CKD stage documented and only 1 patient had CKD stage documented appropriately. Further results are anticipated upon completion of the dataset.

Conclusions/Implications: Conclusions pending further results.

58-Evaluation of a Preventative Health Consultation Service for Underserved Patients at a Student-Run Free Health Clinic. Stickel J, Kumar A, Ngo S, University of North Carolina, Rhodes L, Palm Beach Atlantic University. Email: jessica_stickel@unc.edu.

Objective: This study aims to evaluate the utility of a preventative health consultation (PHC) service at a student-run free health clinic by characterizing participants' existing preventative health needs and evaluating their opinions and implementation of recommendations. Preventative health services are often underutilized by minority and under-resourced populations. As these services are integral to ensuring a community's long-term health, pharmacist-led efforts focused on education and connection to resources present an opportunity to reverse this trend.

Methods: This institutional review board-approved, prospective cohort study recruited participants from a student-run free health clinic at a Spanish-language church and a homeless shelter. Participants were at least 18 years old, completed a background survey, and engaged in a student pharmacist-led PHC. During the PHC, pertinent recommendations from the United States Preventive Services Task Force and Centers for Disease Control and Prevention immunization schedule were discussed. Shared decision-making determined the top three recommendations for each participant, balancing recommendation urgency and participant preferences. Participants completed a post-PHC survey and were contacted within three months to follow up on recommendation completion status. Recommendations were grouped (vaccinations, cancer screenings, communicable disease screenings, chronic disease screenings, health behaviors, pharmacotherapy interventions, and other) and analyzed using descriptive statistics.

Results: Twenty-nine people enrolled in the study: mean age was 47.1 years (13.2 SD), 55% were male, 48% were Spanish-speaking, and 45% were homeless/displaced. Eighty-seven recommendations were made and categorized as health behaviors (29.9%), vaccinations (18.4%), chronic disease screenings (18.4%), communicable disease screenings (17.2%), cancer screenings (11.5%), or other (4.6%). The most frequent recommendation category for Spanish-speaking participants and homeless/displaced participants was vaccinations (23.8%) and health behaviors (41.0%), respectively. Seventeen people participated in follow-up, reporting information on 46 recommendations. Completed recommendations (n=27) included changes in health behaviors (44.4%), chronic disease screenings (22.2%), vaccinations (14.8%), cancer screenings (11.1%), and communicable disease screenings (7.4%). Common reasons reported for completion were "you told me it was a good idea to do this" (48.1%) or "it was free/low cost" (14.8%). Recommendations that were not completed (n=19) included health behaviors (31.6%), communicable disease screenings (26.3%), vaccinations (21.1%), cancer screenings (10.5%), and chronic disease screenings (10.5%). Common reasons for noncompletion were "I do not have time" (36.8%) or "I am planning to in the future" (21.1%). Ninety-three percent of participants who completed the post-PHC survey (n=27) anticipated being able to follow through on all recommendations. Ninety-six percent agreed or strongly agreed that they learned new information about their health from the PHC. One hundred percent reported being glad to have engaged in the PHC and that the PHC service should continue at the monthly health clinics.

Conclusions: Health behaviors, vaccinations, and chronic disease screenings were the most frequently prioritized preventative health needs. Participants completed more than half of the recommendations three months post-consultation, with health behaviors being the most frequently reported completed recommendation. Participants had a positive response to the PHCs, indicating they learned new information and wanted the service to continue. This study suggests that PHC services can increase underserved patient knowledge and engagement with preventative healthcare.

59-Evaluation of Immunization Practices at a Student-Run Free Interprofessional Community Clinic. Ziny S, Vollmer P, Candelario D, Patel K, Rahman A, Chen M, Rosalind Franklin University. Email: sarah.ziny@my.rfums.org.

Objective: The objective of this study is to determine whether staffing an immunizing pharmacist in addition to a clinical pharmacy

specialist at a student-run interprofessional community clinic (ICC) increases immunization rates and adherence to CDC vaccine recommendations. At our health-professions University, students and faculty volunteer at our weekly ICC to provide patient care including vaccinations to underserved patients of Lake County, Illinois. According to the CDC, the provision of vaccination services requires the navigation of several key aspects, including screening for indications and precautions, timing and quantity of dosing, patient consent and education, and reporting of adverse events. In addition to these requirements, pharmacists at our ICC are also meeting the educational needs of student volunteers. The ICC implemented the addition of a pharmacist solely responsible for providing immunization services in an effort to increase rates and adherence. The purpose of this study is to evaluate the impact of an immunizing pharmacist on immunizations.

Methods: An immunizing pharmacist was scheduled at ICC in addition to the clinical pharmacy specialist from October 2018 to February 2019. A retrospective chart review of patients visits during this time period was conducted. Utilizing an electronic medical record, patient demographics, baseline disease states, vaccine indications, documented offer to vaccinate, administration of vaccination and presence of immunizing pharmacist were collected. Vaccination rates and CDC recommendation adherence were compared to a historical control when an immunizing pharmacist was not scheduled. Data was analyzed using SPSS version 25. Chi-square analysis was performed on categorical data; independent sample t-test assessed whether the presence of an immunizing pharmacist increased vaccination rates and adherence to immunization guidelines. A p-value of <0.05 was defined as statistically significant.

Preliminary/Final Results: Data analysis currently in progress.

Conclusions/Implications: Our ICC offers valuable vaccination services to the underserved patients of our local community. Implementation of a pharmacist solely responsible for immunization services in addition to the clinical pharmacy specialist on the interprofessional team is anticipated to improve overall and individual vaccine adherence and rates.

Collaborative Practice

60-Impact of a Workshop on Student Pharmacists' Confidence in Engaging Providers in Collaboration with Medication Therapy Management. Barner J, Moczygemba L, Rush S, Thurman W, The University of Texas. Email: jbarner@austin.utexas.edu.

Objective: The purpose of this study was to evaluate the impact of a workshop on pharmacy students' confidence in provider engagement and knowledge of strategies and tools to use when engaging providers in Medication Therapy Management (MTM). The provision of MTM has been increasing in community pharmacy settings, but one of the barriers to increasing MTM provision and resolving medication-related problems is engaging providers in bidirectional referral and in follow-up when problems are identified.

Methods: This study included third year pharmacy students enrolled in the required introductory pharmacy practice experience course focused on the provision of MTM in community pharmacy settings. The 1-hour workshop consisted of didactic lecture and role-play activities related to pharmacist engaging providers in collaboration. The dependent variables were confidence in: 1) communicating the value of MTM (N=7); 2) addressing barriers to provider collaboration (N=5); and 3) utilizing effective communication strategies when engaging providers in collaboration (N=4) and knowledge of: 4) strategies and steps to engage providers (N=5) and 5) documentation and referral forms utilized in provider engagement (N=3). Additionally, one global item assessed overall confidence in engaging in provider collaboration and one item assessed the impact of the intervention (post-test only). All dependent variables were measured using a 5-point Likert scale (1=strongly disagree; 5=strongly agree) at pre-and post-intervention. Data were analyzed using descriptive statistics and paired t-tests. Cronbach's alphas were used to assess scale reliability.

Final Results: Of the 125 students who participated in the intervention, 120 (96.0%) completed both the pre-and post-tests. The majority were 18-25 years (69.2%) and women (65.8%) and Asian (39.1%) or White (36.7%). Paired t-tests revealed that overall confidence and knowledge increased significantly ($p<0.0001$) from pre-to post-intervention for each of the scales: 1) value of MTM (3.6±0.7 to 4.2±0.6); 2) barriers to provider collaboration (3.5±0.7 to 4.2±0.6); 3) effective communication (3.5±0.6 to 4.2±0.6); 4) strategies/steps (3.4±0.7 to 4.2±0.6); and 5) documentation and referral forms (3.2±0.8 to 4.2±0.6). Mean change scores for all dependent variables ranged from 0.62 (value of MTM) to 1.02 (documentation and referral forms). Scale reliabilities ranged from 0.89-0.98. The 1-item overall global confidence in provider collaboration increased significantly ($p<0.0001$) (3.4±0.8 to 4.2±0.6; mean change 0.82) pre-to post-intervention and students agreed (4.2±0.8) that the training provided them with useful strategies and tools to engage in provider collaboration.

Conclusions/Implications: Schools/Colleges of Pharmacy should consider incorporating training on provider engagement in conjunction with their MTM curricula to help pharmacy students better engage providers with knowledge and confidence regarding MTM provision and collaboration.

61-Assessment on the Attitudes and Perceptions of Students on High-Utilizers After Participation in an Interprofessional Hotspotting Program. Daly C, Lu H, Coffey D, Fratus C, Rahman H, Prescott G, Gengatharan G, University at Buffalo. Email: cjdaly@buffalo.edu.

Objective: The primary objective of this study is to assess the perceptions and programmatic impact of an interprofessional (IP) student hotspotting team working with high-utilizers. Hotspotting involves an interprofessional (IP) team that provides care coordination, while focusing on both medical and social determinants of health (SDOH) for high-utilizer patients who account for

much of healthcare spending. This is an academic IP student-faculty hotspotting program with participants from the school of medicine, pharmacy, public health, nursing, and social work. The program aims to provide hands-on education about SDOH by allowing students to identify the root causes for frequent use of hospital services. Students work with patients to identify the SDOH that impact their health outcomes and use IP collaboration to coordinate care and resolve these barriers.

Methods: This prospective, survey-based, pilot study assessed the perceptions of an IP hotspotting team consisting of medical, pharmacy, nursing and social work students. Students of this program were asked to complete a post-program electronic survey that consisted of multiple choice, select all that apply, rank order, and Likert-type questions. Sections of the survey included: demographics, SDOH, patient interaction, and IP collaboration. The survey was used to assess the program's impact on participating students, along with student perceptions on high-utilizers, topics pertaining to SDOH, patient interaction, and IP collaboration were also included.

Final Results: A diverse team of IP students (n=11, 85%) with various years of hotspotting experience completed the survey. Main student roles in the program include: patient intake at the hospital (n=11), patient follow-up phone calls (n=11), and home visits (n=10). Students primarily communicated with patients in person (face-to-face) (n=11) and over the phone (n=11), with motivational interviewing (n=10) and empathy (n=9) being the primary communication techniques. Students felt they were able to confidently identify examples of SDOH (91%) and use effective communication techniques when caring for these patients (100%), and effectively explain how SDOH affects patient outcomes (91%). Students believed that empathy and compassion were important when providing care for high-utilizer patients (100%) and most agreed that understanding a patient's SDOH improved the patient care provided (91%). Furthermore, all students felt capable helping patients coordinate care through communication between healthcare professionals and the patient. Student responses highlight the positive educational experience garnered from IP collaboration (91%), their confidence in consulting another health professional to answer questions outside a scope of practice (100%) and their ability to work with other unfamiliar professions (91%) in the hotspotting program.

Conclusions: This study provided insight on student perceptions of an IP hotspotting program on high-utilizer patients, along with program impacts on participating students. Post-program student perspectives are important for quality improvement of this program. While classroom time spent on SDOH and IP activities are limited, this program allows for a two-year long commitment in these areas, which provides hands on experience and fosters skill development. Interprofessional programs, such as this, positively complement pharmacy education.

62-Exploring the Role and Value of a Clinical Pharmacist in a Concierge Primary Care Clinic. De Santiago A, University of Arizona College of Pharmacy Medication Management Center, Dhatt H, University of Arizona, Vaffis S, Warholak T, University of Arizona College of Pharmacy, McGlamery E, Personalized HealthCare of Tucson, Taylor A, University of Arizona Medication Management Center Research Team, Scovis N, University of Arizona Medication Management Center, Bingham J, SinfoniaRx. Email: adesantiago@pharmacy.arizona.edu.

Objective: Concierge or membership-based health care models have increased in popularity in recent years as physicians look for alternative business models and patients look for more personal and on-demand care. Concierge practices offer an innovative approach to address ongoing healthcare challenges by offering patients personalized care and amenities that standard primary care clinics do not. To receive those services, patients pay either a monthly or annual fee. While preventable adverse drugs events are associated with death, hospitalizations, and injury to millions of patients annually, to date, pharmacists' role in concierge services has been limited. This could be due to lack of information supporting the value of the pharmacist in this practice setting. Thus, gaining a better understanding of healthcare providers' and staff perceptions about the pharmacist's role in one specific model may provide valuable insight into the value and potential impact on patient-related outcomes. The objective includes to determine the perception of the role and introduced value of pharmacist involvement in patient care at a concierge primary clinic.

Methods: This observational, exploratory study will involve qualitative, face-to-face interviews with various key team members to identify their perceptions regarding the pharmacist involvement and added value in a single concierge service clinic. Individual, semi-structured interviews will be conducted with staff members agreeing to participate. The interviews will be conducted by trained members of the research team, using an interview guide designed specifically for this project, and recorded and transcribed for verification purposes. The inductive saturation model, which focuses on analysis and emergence of new codes or themes, will be used by the two independent reviewers. Saturation of domains and concepts and intercoder reliability will also be assessed. Data management and analysis will be conducted using ATLAS.ti 8.4.18 software.

Results: Personnel from the concierge primary care clinic will be invited to participate in a one-to-one semi-structured interview in Southern Arizona. Personnel may include primary care providers, nurse practitioner, medical assistants, referral staff member, office manager, and clinical pharmacist. We expect to explore several themes including clinical and economical value, personnel quality of life and job satisfaction, among others in our exploration of understanding the value and role of the pharmacist in this concierge primary care clinic.

Implications/Conclusions: These study results will provide valuable insight regarding the pharmacist's value, as a key member of the interprofessional team, outside of the standard financial, revenue-generating arena. However, future work is warranted to assess the impact of pharmacist -delivered services on clinical patient outcomes.

63-Community Pharmacist Provision of Chronic Care Management Services for Medicare Beneficiaries with Uncontrolled Hypertension. Hoehns J, University of Iowa College of Pharmacy, Nichols R, Greenwood J, Greenwood Drug on Kimball. Email: jhoehns@neimef.org.

Objective: Chronic Care Management (CCM) is a billable patient care service for Medicare beneficiaries with two or more chronic health conditions. Although pharmacists may be included among members of the CCM team, pharamcists are not eligible to bill CMS directly for CCM services. Northeast Iowa Family Practice Center (NEIFPC) created a collaborative practice and business agreement with a community pharmacy to provide CCM services to shared Medicare patients. Objectives: This study assessed a CCM hypertension collaboration between a community pharmacy and physician clinic. The objectives of the study were to (1) measure and describe the billing experience of a community pharmacy providing CCM services in collaboration with a Family Medicine physician practice and (2) measure changes in blood pressure control among patients receiving CCM services over a 9 month period.

Methods: Community pharmacists (CPs) documented assessments and interventions directly in the NEIFPC electronic health record. Eligible patients were enrolled in the NEIFPC CCM program, had hypertension with blood pressure >130/80 mm Hg, and received their prescriptions from the partner pharmacy. Outcomes included precise measures of time effort (via Dulcian Health®), revenue from CCM services, and changes in blood pressure control over 9 months. CCM revenue was shared according to a formula based on NEIFPC and CP time spent providing care.

Results: There were 26 patients who received at least one CP encounter and were included in the analysis. There were 6,411 minutes (NEIFPC 3,390, CP 3,021) of CCM service provided and 142 CCM claims billed. Total CCM revenue during the study period was $5,842 (NEIFPC $3,057, CP $2,785). Without CP participation NEIFPC would have only been able to bill 57 claims for revenue of $2,535. There were 98 patient care notes recorded by CPs. At baseline, mean blood pressure was 140.4/77.9 mm Hg. At 9 months, mean blood pressure was 133.1/74.9 mm Hg (SBP, P=0.02; DBP, P=0.022).

Conclusion/Implications: This collaborative CCM hypertension project between a community pharmacy and primary care physician clinic was successful at improving patient blood pressure in a financially viable way. Community pharmacists demonstrated their ability to modify drug therapy, document patient care notes in the clinic EHR, and receive CCM payments for services. Physician clinic CCM revenue also increased by partnership with CP.

64-Development and Evaluation of Chronic Care Management in a Rural Health System. Huppert M, Southwest Health, Kieser M, Hayney M, University of Wisconsin-Madison. Email: mjhuppert@wisc.edu.

Objective: The object of this project is to implement and evaluate a chronic care management clinic in which monthly services are provided to patients by pharmacists and nurses. There has been a growing interest in utilizing the chronic care management model in rural health systems to improve patient health outcomes. The chronic care model is appealing to nurses and pharmacists that want to provide exceptional care.

Methods: To implement the clinic, this project focuses on two aspects. First, patients who could benefit from monthly monitoring must be recognized and enrolled in chronic care management. Second, once the patients are enrolled, optimal workflow for the healthcare team must be created to ensure a productive experience for the patient. An evaluation of A1C will be conducted to ensure the clinic proves worthwhile for patients. In terms of enrollment, nursing staff created a list of patients who have hemoglobin A1C greater than seven percent. The nurses and pharmacists involved met with the primary providers to discuss patients who could benefit from chronic care management. The medical providers were prompted to enroll those patients in chronic care management during their next office visit. The number of patients enrolled in the clinic will be evaluated at the end of the project timeline in February 2020. After enrollment, nurses prioritized and scheduled visits for patients with either a pharmacist or a nurse, depending on patient goals. The visits are currently occurring on a monthly basis, either in person or over the phone. After each visit, the nurse or pharmacist documents the encounter and conveys necessary follow-up to the appropriate personnel (i.e. pharmacist, provider, or nurse). Response time will be measured from initial documentation of follow-up to implementation of a recommendation to evaluate the workflow. Response time will be evaluated on a monthly basis and will be analyzed by averaging individual response times from September 2019 to February 2020. Recommendations that are denied will be documented but not considered in this analysis. Hemoglobin A1C data will be collected from September 2019 to February 2020. Changes in hemoglobin A1C will be the secondary outcome to gauge clinical effectiveness during this newly implemented program. Data collection will be completed through patient chart review and then de-identified for statistical analysis to provide the average change in A1C. This project is considered exempt from the UW-Madison Institutional Review Board.

Results: In progress.

Conclusion: Chronic care management creates a reimbursement model for clinical services provided by nurses and pharmacists. Rural populations are generally considered underserved and lacking resources to provide optimal patient care. In addition to allowing nurses and pharmacists to be compensated for their time and expertise, the chronic care management program provides a unique way to increase access to care and potentially improve patient outcomes.

65-Health-System Implementation of a Refill Authorization Collaborative Practice Agreement Between Physicians and Pharmacists

Across Multiple Community Pharmacies. Jimenez Cadilla B, Intermountain Healthcare. Email: beatriz.jimenezcadilla@imail.org.

Objective: It can take days to approve a refill request submitted from a community pharmacy. This may leave patients without maintenance medications while waiting for such approvals. Brief interruption in maintenance therapies can increase the risk of disease complications and hospitalizations1. As part of an initiative to bridge unnecessary gaps in patient therapy, Intermountain Healthcare has developed and piloted a Refill Authorization Collaborative Practice Agreement (CPA) in three community pharmacies with plans to roll out to other community pharmacies throughout the Healthcare system by mid-year of 2020.

Methods:Community and Ambulatory Care Pharmacists can utilize the refill authorization CPA to review electronical health record (EHR) to confirm patient is current with labs, identify and solve drug related issues, among other opportunities, and approve medication refills to deliver the best patient care. This descriptive retrospective study will outline the necessary steps for successful implementation of the refill authorization CPA and will demonstrate its value in the populations served at our community pharmacies. The refill authorization CPA was approved by the system Pharmacy and Therapeutics committee in April 2019. CPA was first piloted at three community pharmacies effective October 1st, 2019. System-wide education regarding newly established service began April – June 2019. Caregivers at Intermountain Healthcare will continue to receive education regarding the refill authorization CPA throughout end of 2019 and early 2020 as services continue to expand to other community pharmacies. Primary outcome evaluated is successful implementation of the refill authorization CPA; defined as generation of at least one prescription through the refill authorization CPA in all 27 Intermountain Healthcare Community Pharmacies. Secondary outcomes include number of refill request submitted during study period, medication-issues identified by pharmacist while processing refill authorization requests, physician workload before and after CPA implementation, prescription capture rates and prescription turn-around time. Preliminary/Final

Results: This is a research in progress.

Conclusion: This descriptive study will outline the necessary steps for successful implementation of refill authorization CPA across 27 community pharmacies within a healthcare system. It will also evaluate its impact on the population served at our community pharmacies. We hypothesize that successful implementation of the refill authorization CPA will result in decreased physician workload, decreased prescription turn-around time and increase prescription retention rates at Intermountain Healthcare community pharmacies.

66-Clinical Pharmacist Service Expansion Within an Academic Medical Center. Koch J, Jacobson C, Gonzalez J, Loma Linda University. Eamil: jkoch@llu.edu.

Objective: Clinical pharmacists embedded within the outpatient setting at an academic medical center was minimal until a medical director championed for pharmacist services within the internal medicine clinic. Specific clinical needs identified included better diabetes management, reduction in polypharmacy, along with safer medication prescribing. A collaboration developed between pharmacists at the school of pharmacy along with the physician group. Three clinical pharmacists worked with the group to implement clinical pharmacy services to improve patient care and develop best practices for the medical center. Objectives: The objectives of this practice were two-fold; development of clinical pharmacist services within the ambulatory care setting in an academic setting while improving patient care and outcomes. The specific clinical outcomes that the pharmacists in this practice were charged with included a reduction in A1C in patients with poorly controlled diabetes, reduction in polypharmacy, and a decrease in morphine milligram equivalents along with benzodiazepine prescribing in a mostly geriatric patient population.

Methods: Collaboration between the internal medicine medical director along with several school of pharmacy faculty members led to the development of three pharmacist led clinics in the department. These three clinics included a diabetes management clinic, a comprehensive medication management clinic, and a medication safety clinic. Physicians in the group were able to refer patients to each clinic based upon need. A collaborative practice agreement was developed to allow for initiation, discontinuation, and adjustment of medications for diagnosed conditions that the individual pharmacists were able to manage. The three pharmacists in the department represented several different specialties. One pharmacist was board certified in advanced diabetes management, one pharmacist was dually board certified as an ambulatory care pharmacist and geriatric pharmacist, and the other pharmacist was a board certified psychiatric pharmacist.

Preliminary: To date, the medication safety clinic and diabetes management clinic have been live for the last 6 months with patients being referred weekly to each clinic. The collaborative practice agreement along with the ability to bill for services are underway as is the addition of the comprehensive medication management clinic. Provider support for the clinical pharmacy services has been positive and has led to increasing patient referrals and clinical service requests.

Conclusions: Pending Implications: The development of a robust clinical pharmacist service within the internal medicine department is expected to serve as a model for further clinical pharmacist expansion and justification of services to the entire academic medical center.

67-Interprofessional Practice Between Pharmacists and Dentist: A Survey Describing Pharmacist Role and Attitudes of Dentistry to Pharmacists in Pre-Doctoral Dental Education Institutions. Krajewski M, Lu C, Desai K, Gambacorta J, Stellrecht E, Desai K, State University of New York at Buffalo. Email: mike.krajewski@gmail.com.

Objective: Pharmacists providing services within academic dental clinics or other dental settings has been sporadically described in

the literature. The full scope of these services and where they exist is unreported. This environmental scan is being performed to identify and summarize the levels in which pharmacists provide support in predoctoral dental education programs. A secondary objective is to evaluate attitudes of dental practitioners, specifically clinic deans, towards collaborating with pharmacists in this setting as well as potential barriers to hiring a pharmacist. The underlying goal is to raise awareness of this potentially underreported pharmacist practice setting and identify barriers to its implementation.

Methods: A cross sectional survey was circulated to dental school administrators through the American Dental Education Association (ADEA) clinical dean list-serv. An initial invitation to participate was sent in early July 2019, with a follow up email to encourage responses in August 2019. A final invitation was sent to clinic deans of non-responding schools in September 2019 with the intent to close the survey in October 2019. Individual clinical deans were identified through a search of school websites. The IRB approved survey consisted of 18 questions pertaining to the pharmacist's role in dental education programs. Institutions were asked whether pharmacists were utilized and what kinds of services did pharmacists provide. A separate component of the same survey evaluated attitudes towards pharmacist services and barriers to their implementation. Responses to the attitudes and barrier section were assessed using a Likert scale. An interdisciplinary team reviewed the survey to assess for face validity. Univariate analysis was performed on received responses and reported using descriptive statistics.

Preliminary Results: Research in Progress. Thus far a total 27 unique replies have been received from 66 targeted institutions. Of the institutions responding, 10/27 reported utilizing a pharmacist at their institution. The most common tasks performed by pharmacists included medication dispensing (7/10), medication inventory management (7/10), answering drug information questions (7/10), medication reconciliation (7/10), consultation during treatment planning (6/10), research study support (6/10), advising antibiotic selection (6/10), advising analgesic selection (6/10) and didactic lecture to students (6/10). The attitudes and barrier section of the survey received 26 unique replies. Responses were generally positive towards pharmacist ability to contribute to academic dental clinical practice with 20/26 agreeing or strongly agreeing that their institution is willing to collaborate with pharmacists to provide pharmacy services. Twenty-three of twenty-six responses agreed or strongly agreed that pharmacists may improve outcomes for dental patients. In regards to barriers to adding or expanding pharmacy services, 20/26 replied as agreeing or strongly agreeing that pharmacist services would be more acceptable if reimbursement or incentives for their services were available.

Conclusions: Utilization of pharmacists in dental education programs is currently low. Attitudes towards pharmacists are generally positive but financial barriers remain. The collaboration of dentist and pharmacist has potential to meet interprofessional education/practice accreditation standards, improve student clinical expertise, enhance the patient experience, and most importantly, potentially improve treatment outcomes.

68-Partnering Community Health Workers with Pharmacists to Improve Adherence and Blood Pressure Control in a Culturally-Diverse Population. Menendez L, Marks Y, Wallace J, Segal R, University of Florida. Email: lourdes.menendez@ufl.edu.

Objective: Poor medication taking practices represent one of the more vexing problems limiting effectiveness of medications. Pharmacists can experience difficulty in addressing adherence barriers within culturally diverse populations because of a disconnect between those in 'white coats' with the population they serve. Community Health Workers (CHWs) reside within these diverse neighborhoods and share similar backgrounds with these individuals that allow an understanding of the culture, and traditions shaping how people use medications. This study measures the impact of CHW involvement in the medication use process on hypertensive patients in culturally diverse populations.

Methods: Sixty-six CHWs, employed by either a mainly Hispanic Medicaid health plan or by an American Indian Health Council, completed a Medication Therapy Management (MTM) training program. CHWs were trained on motivational interviewing, an overview of hypertension, and assessing medication use and barriers to medication adherence. CHWs interviewed patients with uncontrolled blood pressure (≥ 130 systolic blood pressure or ≥80 diastolic blood pressure) and a proportion days covered value < 80% for antihypertensive medications. CHWs reviewed the patients' current medication list from the physician's office, prescription refill records, and met with the patient to complete a medication review while asking about select adherence barriers. The medication review was then sent to a pharmacist to evaluate and develop a medication action plan (MAP), which was given to the CHW who helped patients overcome any identified adherence barriers. After 30 days, the CHWs repeated the process to reevaluate medication taking behavior, including adherence barriers and refill history. Patients were included in this analysis if they had at least one follow up visit.

Results: 71 patients were included in the analysis. The average blood pressure at baseline was 141/84 mmHg and decreased to an average of 132/80 mmHg at the final visit. The reduction in both systolic and diastolic blood pressure was statistically significant ($p < 0.002$). Based on pharmacist recommendations in the MAP that was given to the patient, there were 350 recommended interventions. The two most commonly recommended interventions were providing a referral to the healthcare provider and providing disease related education statements to address adherence barriers. The possible adherence barriers that could have been identified during patient interviews were grouped into categories including forgetfulness, side effects, knowledge/concerns, cost, and running out of refills. At the initial encounter, there was a total of 157 barriers identified. At the final visit, 73% of forgetfulness barriers, 79% of side effect barriers, 89% of knowledge/concerns barriers, 67% of cost barriers and 83% of running out of refill barriers were resolved.

Implications/Conclusions : The findings of the study show that CHWs, when collaborating with a pharmacist, have a significant impact for the patients in the communities they serve by identifying and resolving adherence barriers that were previously unrecognized or were not resolved by a pharmacist or other healthcare barrier. Through shared backgrounds and similar experiences, CHWs were able to forge meaningful relationships with patients within their communities that resulted in a positive impact on the patients' medication use and blood pressure control.

69-Physician Satisfaction with Clinical Pharmacy Services Using Collaborative Practice Agreement in Team-Based Care. Nguyen H, Tran M, Chapman University. Email: hieunguy@chapman.edu.

Objective: The objectives of this study were to investigate the primary care physician satisfaction of clinical pharmacy services that involve chronic disease management under a collaborative practice agreement (CPA) in a team-based care (TBC) setting, and to evaluate the interest in having clinical pharmacy services in primary care offices without a clinical pharmacist. Background: Due to an aging population, a shortage of adult primary care physicians, and a shift towards achieving high-quality coordinated care, clinical pharmacy has become a growing field. Pharmacist managed chronic conditions improve the overall patient care experience and lead to better clinical outcomes. Numerous studies have shown patient and provider satisfaction with clinical pharmacy services, but not many have focused on satisfaction of clinical pharmacy services in a TBC model under a CPA.

Methods: This study utilized a 30 item, anonymous, cross-sectional survey that was sent via email to primary care physicians in the Providence St. Joseph Heritage Health System in Southern California. The survey was launched in August 2019 for a period of two weeks. Data from the survey were analyzed with the IBM SPSS 25.0 statistical software and bivariate analyses were conducted using chi-squared statistical tests with the p-value set at $p < 0.05$.

Results: A total of 36 providers completed the survey. The majority have not practiced with a clinical pharmacist at their site (66.7%). Of these providers, 96.0% stated that they would like to have a clinical pharmacist working at their site, 54.2% strongly agree/agree that there is value from services provided by clinical pharmacist and 56.0% strongly agree/agree that pharmacists can provide effective disease management. Providers who are more likely to refer patients to pharmacists also want a clinical pharmacist at their current practice site ($p = 0.009$). 91.7% of these providers feel comfortable with having clinical pharmacists on their healthcare team ($p = 0.043$) and 95.8% believe their patients would benefit by having a clinical pharmacist be involved with their care ($p = 0.009$). Providers who have been practicing more than 15 years are more satisfied with the care provided by the clinical pharmacists (100%; $p = 0.026$) and agree that clinical pharmacists are able to provide patients with unique and valuable services (68%; $p = 0.035$). Physicians ≥45 years old are more likely to be satisfied with the care provided by clinical pharmacists compared to other groups (100%; $p = 0.026$).

Conclusion: Physicians who have practiced with a clinical pharmacist, who are older and have been practicing longer reported more satisfaction with clinical pharmacist services. Most physicians who do not have a clinical pharmacist at their site expressed interest in having one become a part of their healthcare team. The results from this study confirm physician satisfaction with and desire to have clinical pharmacy services. This data may help increase the number of clinical pharmacists who practice in TBC model under a CPA.

70-Impact of a Pharmacist-Driven Collaborative Drug Therapy Management Program for Hypertension Management in a Federally-Qualified Health Center. Piers-Gamble M, Varghese J, Brittingham J, Lewicki L, Holyoke Health Center, Inc., Dawson A, MCPHS University. Email: marisa.piers-gamble@hhcinc.org.

Objective: The objective of this study is to examine whether patients enrolled in a pharmacist-driven Collaborative Drug Therapy Management (CDTM) hypertension program will achieve blood pressure (BP) goals defined by specific evidence-based recommendations from the Eighth Joint National Committee (JNC-8). CDTM is a state authorized program that aims to help patients with disease state management through the collaborative efforts of a pharmacist and physician. Through the agreement, the pharmacist has prescriptive authority to manage medications and provide disease-state education to referred patients. This collaborative agreement is beneficial to providers practicing in a federally qualified health center (FQHC) environment where there is a high risk, underserved patient population and provider time is limited. A shared, clinical approach between physician and pharmacist can improve patient access to care for chronic disease states such as hypertension. Current studies demonstrate that pharmacist interventions in the management of hypertension positively impact patient outcomes. If the proposed study demonstrates similar favorable results, this may gain the support of other physicians to partner with a pharmacist, allowing expansion of the CDTM hypertension program to a broader patient base.

Methods: This is a retrospective cohort study that will assess the achievement of BP goals in patients enrolled in a pharmacist-driven CDTM hypertension program at a FQHC. The CDTM hypertension program was implemented in January of 2019 and consists of two pharmacist-physician teams. A list was generated from the electronic health record (EHR) to identify patients who had uncontrolled hypertension and had a primary care provider (PCP) who is collaborating in the program. Patients who agreed to participate in the program were seen in clinic by the pharmacist and followed on a regular basis until their BP goals were achieved as defined by JNC-8. Clinical data for this project were collected from pharmacy software and EHR between September 1, 2019 and October 1, 2019. Inclusion criteria consists of patients: over 18 years of age, a diagnosis of hypertension, referral from the PCP for CDTM hypertension program and a BP above goal per JNC-8 guidelines at first visit. Patients declining this service are excluded. The primary outcome of this study is the number of patients achieving BP goals defined by JNC-8. Secondary outcomes include the following measures:

reduction in BP, number of pharmacist treatment interventions per patient and number of hospitalizations due to hypertension following enrollment into pharmacist-driven CDTM hypertension program. Data will be analyzed with patients serving as their own controls and comparing data from before and after the CDTM intervention. Significance of the primary outcome will be determined by using the Fisher's exact test using GraphPad Prism. Significance of continuous secondary outcomes will be determined using Student T-test. All other data will be analyzed using descriptive statistics.

Preliminary Results: Preliminary review of the data from approved collection period of September 1, 2019 to October 1, 2019 resulted in 36 patients who met the study's inclusion criteria and were subsequently enrolled in the pharmacist-driven CDTM hypertension program.

Conclusions/Implications: In progress.

71-Why Rural Health? The Need for Pharmacy Transformation and Innovation in Rural America. Pinto S, Dickinson A, Middendorf A, South Dakota State University, Hawkins-Taylor C, Xavier University. Email: sharrel.pinto@sdstate.edu.

Objective: In South Dakota's (SD) sixty-six counties, 45% are rural and 52% are frontier. SD has nine Tribal Nations. Rural patients travel 50+ miles to see primary care providers (PCPs) and often wait months for a specialist. However, around 64% of South Dakotans reside within 15 minutes of a pharmacy, making pharmacists far more accessible than most PCPs. Barriers such as weather-related travel limitations, unaffordable childcare, and high rates of uninsured adults in rural areas also impact patient care. SD has a large number of farmers/ranchers whose workloads impede them from seeking timely healthcare. Contrary to these major challenges and perceptions of a rural state, SD has a conducive infrastructure for health care. Three large Integrated Delivery Networks (IDNs) are based in SD. Sanford Health has 482 clinics, with worldwide medical centers, and Avera Health has 215 clinics in four states. In addition to telehealth/telemedicine programs (Avera leads the nation in these), SD has a statewide electronic health record. With these innovations and resources, SD is an ideal place to grow and expand program-related programs that can be applied nationwide. Objectives of the project: This paper will outline the five-year plan of this statewide initiative and discuss how findings from year one are impacting decision-making, program development, and innovation in the subsequent years.

Methods: In year one patients, practitioners, and payers participated in 1.5 hour elicitation interviews (EIs) or 3-hour focus groups (FGs). Participants were recruited with posters, contracting with healthcare/market research agencies, and a referral/word-of-mouth system. EI and FG sessions were audio recorded, transcribed, coded, and qualitatively analyzed using NVivo. Year Two will focus on program implementation, development, and continued engagement. Years three-five will focus on implementing programs and trainings, evaluating programs for effectiveness, and building a sustainable structure for healthcare organizations.

Results: There were 121 participants (50 patients, 69 practitioners, 2 health plans). More than half of patients were from rural communities. Patients were generally unaware of Medication Therapy Management (MTM) and enhanced pharmacy services such as medication packaging or synchronization. There is a general misunderstanding among non-pharmacy practitioners of different roles of pharmacists. Practitioner goals for the next 5 years aligned well with patient needs. These goals included completion of MTM training and increasing the following: ability to meet the needs of low-income patients; use of diabetes education programs; referrals to weight management; medication adherence. Transitions in care and gaps in communication were key target areas. Payers expressed the need to be educated on reimbursement models for pharmacy based services, effective communication for beneficiaries and practitioners, and covering services that improve holistic wellness and health outcomes.

Implications/Adaptability: As pharmacists begin to take the lead in expanding their role and offering clinical services, this statewide initiative will offer supportive resources and expertise. By engaging and working with each stakeholder group, this project will pave the path to innovative program development at various levels of health care across a rural state and offer other states an opportunity to learn through these experiences.

72-Implementation of a Community-Based Pharmacist-Run Attention Deficit Hyperactivity Disorder Clinic in a College Health Center. Pohl L, El-Kurdi R, Selinger R, Sauls A, Rhodes L, Marciniak M, University of North Carolina at Chapel Hill. Email: lepohl@email.unc.edu.

Objective: Pharmacist expertise in the management of chronic health conditions is well-documented. Pharmacists practicing in college health centers have an opportunity to improve the quality of medication management for patients with attention deficit hyperactivity disorder (ADHD) by monitoring for effectiveness, assessing tolerability, making medication regimen recommendations, and adjusting medication doses. To our knowledge, published evidence is lacking to describe the pharmacist's role in managing an ADHD specialty clinic. In 2017, a pharmacist-run ADHD clinic was established through Campus Health at a public university in the southeastern United States. Partnering with psychiatrists in Counseling and Psychological Services (CAPS), the pharmacist conducts co-visits and provides medication management for clinic patients. The primary objective of this study is to measure the growth of an ADHD clinic in a college health center following the integration of clinical pharmacists. Secondary outcomes are to evaluate adherence to policies and procedures by tracking blood pressure monitoring and type of visit (face-to-face vs telephone/web portal encounter) before and after pharmacists were integrated into the ADHD clinic.

Methods: This study is a retrospective evaluation of data extracted from the electronic health record utilized by an ADHD clinic in a college health center. Patients 18 years of age and older with a diagnosis of ADHD who completed a visit for medication evaluation or

medication follow-up from July 1, 2016 through June 30, 2019 will be included in the analysis. Data will be excluded if the visit occurred outside of this timeframe or was a visit type other than those listed above. Data prior to clinic establishment (July 1, 2016 through June 30, 2017) will be compared to data since clinic establishment (July 1, 2017 through June 30, 2019). Data to be collected include: appointment date, patient age, patient gender, appointment type, encounter type (face-to-face vs. telephone/web portal encounter), medication names and dose, blood pressure, heart rate, comorbid diagnoses (problem list), and stimulant medication contract signature date. The data will be used to compare the number of patients seen for ADHD medication management, the number of documented blood pressure recordings, adherence to stimulant medication contract policy, and type of visit before and after pharmacists were included in the clinic. Data will be evaluated using descriptive statistics.

Preliminary Results: Institutional Review Board approval is anticipated in October 2019. Data extraction will begin in November 2019, with data analysis complete by February 2020.

Conclusions/Implications: Including pharmacists in an interprofessional clinic has the potential to ensure positive clinical outcomes for patients and to assist patients in thriving with ADHD while enrolled in college. Data from this study will help to evaluate clinic operations and may serve as a model for other pharmacist-run clinics in community-based or college health settings.

73-An Evaluation of Interprofessional Education (IPE) During a Prescribing and Prescription Law Event. Sibbitt B, Fawcett C, Sullivan D, Deitschmann N, Cedarville University, Neeley S, Poling D, Wright State University. Email: bgsibbitt@cedarville.edu.

Objective: While many healthcare disciplines are involved in the prescribing process, each discipline has nuances on curricular requirements, prescribing laws, and prescriptive authority. The primary objective of this study is to engage pharmacy, medical, physician assistant, and advanced practice registered nursing students using interprofessional education (IPE) as a means to discuss prescribing law and the subsequent perceptions of multidisciplinary communication. Student knowledge of pertinent state and federal provider and prescription laws will be assessed. Additionally, student perceptions and attitudes towards multidisciplinary teams will also be assessed.

Methods: In this prospective, cohort study, students will participate in a didactic lecture focusing on the roles of the participating disciplines in prescribing practices. Pertinent state and federal prescriber and prescription laws will also be addressed. Following the lecture, students will be randomly divided into multidisciplinary groups for three workshop sessions. Workshops sessions will focus on recognizing prescription errors, prescriptions requiring durable medical equipment (DME), and prescriptions containing controlled substances. Students will be administered the "Student Perceptions of Interprofessional Clinical Education-Revised" (SPICE-R) instrument prior to and following the workshop sessions. Additionally, student knowledge will be assessed using a Team-Based Learning (TBL) pedagogy after the workshop sessions, using an individual-readiness assessment test (iRAT) and a multidisciplinary team-readiness assessment test (tRAT).

Preliminary Results: Research is in progress with the IPE event occuring in December 2019. Analysis of the pilot cohort (2018), showed an overall statistically significant increase in student knowledge between the iRAT and tRAT scores ($p=0.002$). Additionally, student perceptions and attitudes towards multidisciplinary health care teams were statistically significant for 9 of 10 SPICE-R items ($p\leq0.05$).

Conclusions: Research in progress.

75-Characterization of Community Pharmacist Potential Contribution to Clinician Performance Measurement Scores. Yang J, Yang J, University of Maryland, Nelson M, Campbell P, Pickering M, Pharmacy Quality Alliance. Email: jsyang56@umaryland.edu.

Objective: The objective of this study was to identify and characterize quality measures that community pharmacists have potential to impact in the Merit-based Incentive Payment System (MIPS). The MIPS, a value-based care program implemented by the Center for Medicare and Medicaid Services' (CMS), provides financial incentives to eligible Medicare Part B clinicians based on their MIPS performance score. The MIPS Score consists of four performance categories, of which, quality measures carry the most weight. Although pharmacists are not considered MIPS-eligible clinicians, their enhanced pharmacy services can have an impact on patient's outcomes, thus impacting clinician scores. Currently, little evidence exists to characterize the potential for community pharmacist impact on clinician quality measures.

Methods: A previously developed, reliable and valid Quality Measure Impact Tool for Community Pharmacy (QMIT-CP) was utilized to identify MIPS measures on which community pharmacy has the potential to impact. Two reviewers independently rated the 2019 MIPS quality measures on the 5 QMIT-CP criteria: 1) measure addressed use of medications or immunizations; 2) included chronic diseases; 3) treated patients in the outpatient setting; 4) included outcomes; and 5) if data were available to community pharmacists. Discrepancies were resolved by a third reviewer. The measures were ranked as high, moderate, or low community pharmacist impact based on the QMIT-CP score. Measures ranked high were characterized based on inclusion in specialty measure sets, medical conditions addressed, and disease grouping based on the International Classification of Diseases 11th Revision (ICD – 11). Lastly, the measures were mapped onto the Medication Therapy Management framework developed by American Pharmacists Association (APhA) to identify and describe enhanced services community pharmacists may provide to contribute to performance on each measure.

Final results: There were varying levels of potential community pharmacist impact on the 2019 MIPS quality measure set (N=258). Most measures were ranked low (n=151), followed by medium (n=75), and high (n=31). Of the measures with high potential for

community pharmacist impact, most were within the specialty measure set of Family Medicine (n=15), Internal Medicine (n=10), and Preventative Medicine (n=5). A majority of the measures included Diseases of Circulatory System (n=10), Diseases of Musculoskeletal System (n=4), and Diseases of Respiratory and Mental, Behavioral, or Neurodevelopmental Disorders (n=3 each). Lastly, community pharmacist's Medication Therapy Review (n=28), Disease Management Coach/Support (n=24), and Immunization (n=3) services were the most common activities to describe community pharmacist impact.

Conclusions/Implications: Application of QMIT-CP on quality measure sets and characterizations of the community pharmacist's potential impact on clinician quality measures can provide guidance to support collaborative care. Future research is needed to characterize how enhanced pharmacy service impacts performance scores.

Communication/Patient Education

76-Impact of Pharmacist Provision of Naloxone at an Independent Community Pharmacy Operating Under State Naloxone Protocol. Anderson K, University of South Carolina, Stevens W, Connelly L, Medicine Mart of West Columbia. Email: katieanderson.pharmd@gmail.com.

Objective: The primary objective of this study is to determine if a standardized risk assessment by community pharmacists and subsequent offer to provide naloxone by protocol impacts naloxone possession rates among patients dispensed opiates. The secondary objective of this study is to identify factors associated with increased risk of opioid-related overdose that may be common among patients dispensed naloxone at an independent community pharmacy. While all 50 states have laws that expand access to the reversal agent through pharmacy dispensing, in 2018 naloxone was provided to only 1 in 69 patients dispensed a high dose opioid. In 2017, prescription opioids accounted for more than 47,000 deaths in the united states. reducing the number of opioid associated deaths remains a public health priority.

Methods: This study will be conducted at an independent community pharmacy over a 4 month period. Patients 18 years of age or older presenting a prescription for an opioid medication will be included in the study. Any patient with a known allergy to naloxone will be excluded from the study. the pharmacist will provide counseling regarding the role of naloxone, signs of opioid overdose, and how to administer naloxone. naloxone will be dispensed pursuant to state protocol upon patient request. Deidentified data from the study period will be matched to data from the previous year, prior to the initiation of the naloxone service, to determine if community pharmacy-based naloxone dispensing by protocol improved the naloxone possession rate--expressed as the percentage of patients dispensed an opioid prescription who also received naloxone. Factors associated with increased risk of opioid-related overdose or respiratory depression will be collected to identify the most common risk factors among patients dispensed naloxone by an independent community pharmacy. Descriptive statistics will be used to report data regarding factors associated with increased risk of opioid-related overdose of patients dispensed naloxone by an independent community pharmacy.

Results: Pending.

Conclusions/Implications: This study has the potential to demonstrate the impact a pharmacist provided naloxone service may have on the number of doses of naloxone provided to patients at an independent community pharmacy.

77-Exploring the Use of an iPad App for Enhancing Communication Between Pharmacists and Patients with Hearing Impairments. McKnight K, Darling R, Blakely M, University of Wyoming. Email: michelle.blakely@uwyo.edu.

Objective: The National Center for Health Statistics reports that approximately 37.6 million adults have some level of hearing loss/impairment. Hearing impairments can create barriers to effective healthcare delivery resulting in unclear communication as it pertains to a medication's benefits, side effects and dosage instructions. Studies have consistently shown that pharmacists feel uncomfortable when communicating with deaf and hard of hearing patients and unprepared to understand or serve their needs. Furthermore, inadequate communication between pharmacists and deaf and hard of hearing patients impedes the establishment of rapport and may result in a strained healthcare professional-patient relationship. This can widen healthcare disparities and negatively affect treatment outcomes or result in a lack of knowledge on health issues and avoidance of care. The objectives for this project are to: (1) evaluate the use of a communication app for patients who are hard of hearing and/or deaf and its usefulness in interactions with a pharmacist, (2) identify barriers to using an app for communication in healthcare settings, and (3) assess changes in confidence levels for pharmacists and patients when using assistive technology (iPad app) to communicate.

Methods: This is a pilot/feasibility pre/post-test study. Approximately 52 pharmacy students (P2s) enrolled in a pharmacy communications course and 6 theatre students have been recruited to participate in this project. The 6 theatre students have received one hour of training for role-playing the standardized patient who is hearing-impaired. At the beginning of the communication lab, pharmacy students are provided a condensed version of the patient script (i.e., it does not provide all of the patient information contained in the patient role) -to simulate a realistic situation that they may encounter in the pharmacy. Pharmacy students have received one hour in-class iPad app training from Wyoming Assistive Technology Resources (WATR) as well as supervised practice with the app prior to project implementation. The first lab involved the usual mode of communicating for pharmacy students with standardized patients who are hearing-impaired (theatre students) without the use of the app; and a pre-test survey was given at the conclusion of the 10-minute interaction to ask all participants about this mode of communication. The second lab will involve the use of the app. Pharmacy students will have 10-minutes to role-play (using the app to help communicate) with the

standardized patients who are hearing-impaired (theatre students). Post-tests will be administered at the conclusion of this lab.

Results: Data are currently being collected. Pre/post-test data will be analyzed to determine the feasibility of using assistive technology (iPad app) to improve communication and understanding between pharmacists and hearing-impaired patients.

Implications/Conclusions: Findings from this project could assist colleges/schools of health sciences as well as practicing pharmacists to improve communication with patients who are hearing-impaired. Increasing pharmacists' skills and confidence in communicating with and engaging deaf/hard of hearing patients would improve patient safety, increase patient knowledge of their health care and associated treatments, promote safe medication use, and optimize patient outcomes.

78-Examining the Feasibility of Using an iPad App for Communication Between Pharmacists and Patients with Hearing Impairments. Darling R, McKnight R, Blakely M, University of Wyoming. Email: michelle.blakely@uwyo.edu.

Objective: The National Center for Health Statistics reports that approximately 37.6 million adults have some level of hearing loss/impairment. Hearing impairments can create barriers to effective healthcare delivery resulting in unclear communication as it pertains to a medication's benefits, side effects and dosage instructions. Studies have consistently shown that pharmacists feel uncomfortable when communicating with deaf and hard of hearing patients and unprepared to understand or serve their needs. Furthermore, inadequate communication between pharmacists and deaf and hard of hearing patients impedes the establishment of rapport and may result in a strained healthcare professional-patient relationship. This can widen healthcare disparities and negatively affect treatment outcomes or result in a lack of knowledge on health issues and avoidance of care. The objectives for this project are to: (1) evaluate the use of a communication app for patients who are hard of hearing and/or deaf and its usefulness in interactions with a pharmacist, (2) identify barriers to using an app for communication in healthcare settings, and (3) assess changes in confidence levels for pharmacists and patients when using assistive technology (iPad app) to communicate.

Methods: This is a pilot/feasibility pre/post-test study. Approximately 52 pharmacy students (P2s) enrolled in a pharmacy communications course and 6 theatre students have been recruited to participate in this project. The 6 theatre students have received one hour of training for role-playing the standardized patient who is hearing-impaired. At the beginning of the communication lab, pharmacy students are provided a condensed version of the patient script (i.e., it does not provide all of the patient information contained in the patient role) -to simulate a realistic situation that they may encounter in the pharmacy. Pharmacy students have received one hour in-class iPad app training from Wyoming Assistive Technology Resources (WATR) as well as supervised practice with the app prior to project implementation. The first lab involved the usual mode of communicating for pharmacy students with standardized patients who are hearing-impaired (theatre students) without the use of the app; and a pre-test survey was given at the conclusion of the 10-minute interaction to ask all participants about this mode of communication. The second lab will involve the use of the app. Pharmacy students will have 10-minutes to role-play (using the app to help communicate) with the standardized patients who are hearing-impaired (theatre students). Post-tests will be administered at the conclusion of this lab.

Preliminary Results: Data are currently being collected. Pre/post-test data will be analyzed to determine the feasibility of using assistive technology (iPad app) to improve communication and understanding between pharmacists and hearing-impaired patients.

Conclusions/Implications: Findings from this project could assist colleges/schools of health sciences as well as practicing pharmacists to improve communication with patients who are hearing-impaired. Increasing pharmacists' skills and confidence in communicating with and engaging deaf/hard of hearing patients would improve patient safety, increase patient knowledge of their health care and associated treatments, promote safe medication use, and optimize patient outcomes.

79-Evaluation of Medication Safety Effectiveness Training in a Workplace Environment. Caronis A, Lindeman S, University of South Carolina. Email: acaronis@email.sc.edu.

Objective: The aim of this study is to evaluate the effectiveness of naloxone safety training provided by pharmacists or pharmacy students in a workplace environment where opioids are compounded and packaged. Providing consistent training to all employees can be a challenging task because employees have various educational and vocational backgrounds. Naloxone training is commonly provided to healthcare professionals and law enforcement officers who have similar training needs. This training was developed so individuals with little medical background could easily understand how and when to use naloxone reversal.

Methods: A comprehensive training program was developed by a pharmacy team to educate employees of any informational background regarding opioids. A pre-training questionnaire was given to employees of Nephron Pharmaceuticals Corporation who were at least 18 years old to assess any prior training or knowledge. The initial questionnaire, focusing solely on naloxone, was followed by a medication safety training provided by the pharmacy team. The same questionnaire was administered after the medication safety training to assess comprehension and retention of the knowledge gained from the training. The pre-and post-training questionnaire answers were recorded in a REDCap survey tool that linked each participant's pre-and post-training questionnaire answers together to evaluate changes in knowledge and understanding of topics presented in training. Paired t-tests were performed on data collected thus far to evaluate the average pre-and post-training scores. In addition, McNemar tests were performed to assess individual questions; questions proved to be significant if they provided a confidence interval that did not cross 1. Moving forward, additional data will be collected as this training is conducted regularly at Nephron Pharmaceuticals Corporation training sessions for new employees.

Preliminary Results: Thus far 67 employees completed both pre-and post-training questionnaires. Statistical analysis was performed on current data and trends indicating overall knowledge growth were identified. Evaluating the McNemar tests, the most significant difference was seen in four of the five questions: site of administration (odds ratio CI = 2.69 – 8.51); identifying opioid medications (CI = 1.99 – 5.54); number of dose(s) in a single box of naloxone (CI = 1.59 – 3.94); and timing between doses administered (CI = 1.54 – 3.72). Most employees were able to identify correct answers after the naloxone safety training was given, regardless of their previous knowledge of this topic. Data will continue to be collected until February 1st to assess efficacy of naloxone safety training.

Implications: Our findings so far are encouraging as all employees, regardless of their educational and vocational backgrounds, were able to learn from the training as demonstrated by the improved scores on questionnaires post-training. Further data collection is needed to determine the full impact of medication safety training in a workplace environment.

80-The Role of Ambulatory Care Pharmacy in the Analysis of Patients Eligibility for Bisphosphonate Holiday to Limit Adverse Events and Healthcare Costs. Fuhrman B, Sadiq U, Community Care. Email: Benjamin.Fuhrman@acphs.edu.

Objective: Pharmacy services embedded within primary care practices are well positioned to assess bisphosphonate use. According to the 2019 guideline on Pharmacological Management of Osteoporosis in Postmenopausal Woman, “fracture risk should be reassessed after 3 to 5 years… those who are at low-to-moderate risk of fractures should be considered for a bisphosphonate holiday.” A bisphosphonate holiday is defined as temporary discontinuation in bisphosphonate use for up to 5 years.1 The drug holiday works to decrease the risk of adverse events from bisphosphonates, such as osteonecrosis of the jaw (ONJ), atypical femur fractures, atrial fibrillation, and esophageal cancer. The patient still benefits from the drug holiday due to bisphosphonates integration into the skeleton and continuing to exert an antiresorptive effect after dosing is discontinued.2 While this is well defined in guidelines, in practice, this reassessment is often missed, and patients can potentially remain on therapy indefinitely. Unnecessary long-term use increases the risk of adverse events and negative outcomes for the patient. Due to this potential for harm, it is important to identify patients’ level of risk of fracture as well as identify those that are eligible for drug holidays. Comprehensive medication evaluation, as well as educating providers and patients about drug holidays may limit the potential for harm while improving health outcomes and decreasing health care costs. The objective of this study is to identify the role of ambulatory care pharmacy services in identifying eligibility for a drug holiday for bisphosphonate treatment.

Methods: An analytical report was run within a primary care site to identify patients with an active prescription for a bisphosphonate. Medical chart reviews were then completed by student pharmacists, supervised by a clinical pharmacist embedded within the practice to determine fracture risk level and eligibility for a drug holiday. Based on fracture risk, a chart note was entered alerting the primary care provider of eligibility of drug holiday and appropriate time frame for osteoporosis screening follow up. Outreach to patients via telephone was conducted to provide education for drug discontinuation or bone density screening. Outcomes including medication discontinuation and screening recommendation acceptance rate was tracked to assess pharmacy service impact.

Results: Research In progress.

Conclusion: Research in progress.

81-Counseling on Exercise: The Pharmacist's Role. Hettinger K, Butler University. Email: khetting@butler.edu.

Objective: Pharmacists are the most accessible healthcare provider and have a great opportunity to influence patients’ lifestyles. Currently, only one in three adults in the United States meets the weekly physical activity recommendations, and only 5% of adults are active for at least 30 minutes a day. Exercise is a key component of health and wellness, especially for patients already experiencing co-morbid conditions. Community and Ambulatory Care pharmacists in particular have the opportunity to develop relationships and continuously counsel patients to lead healthy lives, and exercising regularly is a key part of staying healthy. Pharmacists are in an exciting position to advocate for changes in our patients’ lifestyles daily and are in an incredibly accessible position to do so. However, exercise management and recommendations are generally not a large part of formal pharmacy education although it is understood that patients should be exercising.This study aims to assess how comfortable pharmacists in these settings are counseling on exercise recommendations as well as aims to start the foundation for further education in this area.

Methods: Community and Ambulatory Care pharmacists across the state of Indiana will receive access to a voluntary and anonymous survey regarding their use of exercise as a counseling point with their patients. 1/4 of the questions will be demographic; 1/4 of the questions will ask their opinions on their personal knowledge base about exercise recommendations; and the other half of the questions in the survey will assess the factual knowledge base of pharmacists in regards to proper exercise recommendations and counseling. Data collection will span over the course of two weeks. The data will demonstrate how comfortable pharmacists are counseling on exercise as well as compare to the factual knowledge they may or may not have on proper exercise recommendations. The data will compare perceived comfort versus factual knowledge on the topic, as well as demonstrate key areas for improvement in the education of pharmacists in the future, if any.

Preliminary Results: Data collection is still currently in process but the hypothesis is there is a disconnect in knowledge, as well as comfort, in counseling on proper exercise recommendations for patients.

Conclusions and Implications: The aim of this study is to address a barrier in education on exercise recommendations. With data to suggest pharmacists either feel they do not have the education, understanding, or resources to properly counsel on exercise, a plan to

develop suggestions for education, resources for use, or an algorithm/handout to help assist pharmacists with this task can be developed. With the creation of additional resources and education, pharmacists can become equipped to increase exercise and activity in America's increasingly sedentary population. Not only will this help the individual's health, but this may start a trend towards utilizing exercise more in the health and care of our patients.

82-Patient Education Dissemination and Effect on Disease Activity Among Patients with Crohn's Disease at a National Specialty Pharmacy. Hyatt C, Meijer/Ferris State/Pfizer, Wenstrom K, Roe B, Biehl C, Meijer, DeLor B, Pfizer. Email: chaz.hyatt@meijer.com.

Objective: The primary objective of this study is to determine if providing patients with enhanced patient education materials via an online disbursement platform affects disease state activity for Crohn's disease (CD) patients. Secondary objectives include measuring the effect of enhanced patient education on adherence and patient confidence in managing their disease. CD affects more than 500,000 people living in the United States and can cause inflammation in any part of the digestive tract. For patients with moderate to severe disease, specialty medications (like anti-tumor necrosis factor (TNF) agents adalimumab, certolizumab pegol, golimumab, and infliximab) are efficacious for induction and maintenance of remission of CD. Treatment and disease progression for CD can be complex, and almost fifty percent of patients seek additional information. Studies have shown that a lower perceived understanding of CD and a limited knowledge of CD medications leads to nonadherence. Research has also shown that patients with CD prefer to receive patient education focused on their medications, living with Crohn's disease, and diet modification.

Methods: This prospective study will compare patients receiving usual care to those receiving enhanced educational materials. The study population will include patients with CD who are 18 years or older receiving specialty pharmacy services at a national specialty pharmacy. Eligible patients will be matched and randomized into two groups. The usual care group will receive medication counseling for the first fill and whenever they experience an adverse event and the experimental group will receive the same services plus additional education materials via an online disbursement platform. Tracking of patient education viewing will be monitored via the online platform. Additional patient education will consist of general information about living with Crohn's disease, medication specific information with administration techniques, and dietary recommendations. The primary outcome will be measured using the Harvey-Bradshaw Index (HBI), which is a validated tool used to assess disease activity in Crohn's disease. Patient HBI scores will be calculated for each patient upon medication refills through the specialty pharmacy. Adherence will be measured by calculating proportion of days covered (PDC) using pharmacy claims data. Patient confidence in managing their disease will be collected via survey when patients refill their specialty medications. Data collection and analysis will be conducted over a six month period. Patient demographics and data will be compared using a chi-squared test for categorical data and t-test for continuous data.

Results: Awaiting Institutional Review Board approval. Preliminary data will be presented at the APhA Annual Meeting and Exposition in March 2020.

Implications: Research has shown that providing patient education can lead to increased medication adherence. This project aims to find out if that increased adherence translates to better patient disease state activity scores. If so, providing extensive patient education utilizing an online disbursement platform could become standard of practice at specialty pharmacies.

83-Pharmacist-Led Interactive Pictograph Counseling for Patients with English and Spanish Language Communication Preference and Its Effect on Adherence in the Community Pharmacy Practice Setting. Jiang T, Jiang T, Are O, Longoria J, Bui A, Chen I, Garling A, Pope N, Weems J,The University of Texas -Austin, Brewster J, H-E-B Pharmacy. Email: tommyjiang@utexas.edu.

Objective: In the United States, 40-80% of medical information provided to patients are immediately forgotten, and this attributes to a nationwide upward trend in medication-related problems. Improper administration and understanding of their medications can lead to poor adherence, uncontrolled disease states, and eventual hospitalizations. Pictographs can be utilized with spoken instructions to improve communication of medication information to patients especially when a language barrier exists. Pictographs have the ability to convey information such as where to apply or administer medications, storage conditions, time of dose, and possible side effects such as itching, vomiting, drowsiness, etc. The use of pictographs in medication counseling has been shown to increase understanding and significantly improve recall of medication instructions.

Methods: The aim of this study is to determine whether the use of pictographs will increase medication adherence and understanding of proper administration. Participants will consist of English or Spanish language speaking patients who fill their maintenance medications (intended for continuous use over 90 days) at two H-E-B Pharmacies in Austin, Texas. Patients will be excluded if their prescriptions are automatically refilled prior to the study or are intended for non-continuous use (under 90 days), and patients who speak languages other than English or Spanish. Patients will be assessed and flagged for a mandatory counseling session. The pharmacist will counsel the patient utilizing the pictograph along with verbal instructions. The patient's understanding will be assessed and recorded by using the teach-back method and by completing a post-counseling questionnaire. Patient refill records and the proportion of days covered (PDC) adherence measurement will be assessed at 3 and 6 months for each patient to determine the effects on patient adherence. Outcome measures include number of patients that were counseled during the study period with the pictograph; number of patients demonstrating understanding and comprehension of pictograph images including the number of correct teach back responses from patients; and medication adherence as measured using PDC. During the study, pharmacy workflow effects will be analyzed to assess the impact of the pictograph use on duration of counseling time. The results will be reported as percentages of patients understanding of their medications, percentage of refills on the medications counseled utilizing pictographs,

and calculated PDC of each medication.

Results: Research-in-progress.

Conclusions: Research-in-progress.

84-Pharmacist and Patient Perceptions of Counseling and Use of Epinephrine Auto-Injectors. Kimble C, Davis T, Babcock C, Kimble A, Marshall University. Email: craig.kimble@marshall.edu.

Objective: To assess pharmacist and patient knowledge and perceptions related to counseling and use of epinephrine auto-injectors (EAI).

Methods: Surveys were completed on-line utilizing the Qualtrics® research tool via anonymous email links. Separate surveys were distributed to both patients and pharmacists. Patient perceptions and practices related to the use and counselling surrounding an EAI were assessed. Data from the pharmacist survey focused on perceptions of counseling needs and actual educational instruction provided. A goal was to identify any perceived gaps in product use instruction and to identify areas for improved teaching and communication. The pharmacists were invited to participate via list serves, meetings, social media, and personal invites. Patients and family members who have received and/or administered EAIs were recruited on social media through allergy forums and educational pages. Patients were excluded if they were a health care professional. The 25 question pharmacist survey assessed knowledge, perceptions, and practices. The 26 question patient survey assessed EAI educational topics, counseling, and perceived educational value. Responses were compared in order to identify encounter discrepancies of how the patient perceived the encounter versus the pharmacist's reflection. Pharmacists reflected on actual patient educational and instructional practices.

Results: While 32% of the 71 pharmacist respondents declared they "usually or always" counseled and demonstrated EAIs, nearly 61% of the 197 patient respondents stated their pharmacist did not explain how to use an EAI the first time it was filled. Despite the request for additional counseling on signs and symptoms of anaphylaxis and EAI use by 33% of patients, 87% of pharmacists felt that 3 min or less was the average amount of time needed to effectively counsel the patient during an EAI refill. Moreover, 46% of patients surveyed stated that cost had been a barrier to obtaining new EAIs.

Conclusion: The survey results indicate an opportunity for pharmacists to provide additional instruction and reinforcement of key information including storage and handling of EAIs and to address patient concerns such as cost. An opportunity to improve counseling upon EAI dispensing was identified. Pharmacists should consider reinforcing key points with patients and caregivers at each medication fill (initial and refill). Additional education is needed for pharmacists to ensure that appropriate counseling is provided on a routine basis. Counseling points including signs and symptoms of anaphylaxis, administration (including updated information), appropriate storage, quantity required to treat anaphylaxis, and post injection care should be addressed. Key Words: allergy, anaphylaxis, epinephrine auto injector (EAI), patient counseling.

85-Impact of Pharmacist Counseling to Enhance the Accessibility of Naloxone Nasal Spray to Patients in a Community Pharmacy Setting. Napoli K, Nadpara P, Goode J, Virginia Commonwealth University, Grant M, Remines J, Kroger. Email: hulettk@vcu.edu.

Objective: Despite the Commonwealth of Virginia having a standing order for pharmacists to dispense naloxone, many patients are not receiving this lifesaving medication. A direct counseling approach will be implemented to increase education and distribution of Naloxone. To evaluate if pharmacist counseling improves the percentage of patients who receive a prescription for Naloxone Nasal Spray compared to the previous year Naloxone Nasal Spray fill history and to determine if the pharmacist counseling impacts patient's confidence with opioid overdose and Naloxone use.

Methods: A 4-month prospective interventional study will be conducted at five geographically similar large community chain pharmacies in Southwest Virginia. A National Drug Code activity report will be generated at the beginning of the study using the internal pharmacy computer to identify patients 18 – 64 years old who have filled an opioid prescription in the previous 30 days and have not picked up a naloxone prescription. The report will also be generated weekly to identify new opioid prescriptions. After the report is generated, pharmacy staff will place hard stop counseling notes on eligible patient profiles. When an eligible patient presents to the pharmacy, the pharmacist will use a standardized script to educate the patient about the value of having naloxone when opioids are in the home and recommend the patient receive a prescription for naloxone nasal spray. If the patient accepts, the pharmacist will provide training and education utilizing a standardized counseling script and demonstration naloxone nasal spray kit. Patients who receive a pharmacist recommendation for a naloxone nasal spray prescription will be provided with a post intervention survey. The questionnaire will be 10 questions with a mix of multiple choice and fill in the blank. Demographic information collected will include age, gender, and ethnicity. Questions will assess patient satisfaction regarding the pharmacist training, and if the pharmacist impacted their decision on getting naloxone. The percentage dispensed will be determined by calculating the number of patients who were dispensed naloxone prescriptions divided by the number of patients who were eligible for naloxone nasal spray during the Intervention period and be compared to the percentage of naloxone nasal spray prescriptions dispensed during same 4-month time period in the previous year. Results will be analyzed using bivariate and multivariable analysis.

Results: Research in Progress.

Conclusions/Implications: A direct counseling approach is expected to increase in the number of naloxone nasal spray dispensed from

the pharmacy.

87-Improving Awareness of Enhanced Pharmacy Services Among South Dakotans with Diabetes and Cardiovascular Disease: A Quality Improvement Innovation Project. Pinto S, Kotschevar C, Schroeder B, Huang Y, Middendorf A, Seiber M, Muller Z, Sirek A, South Dakota State University. Email: sharrel.pinto@sdstate.edu.

Objective: South Dakota has a large proportion of medically underserved patients with diabetes and cardiovascular disease, largely due to limited access to traditional diabetes care and other health care services. Pharmacy services such as Medication Therapy Management (MTM) are offered in South Dakota pharmacies and provide disease state education and medication regimen optimization. Findings from year one of a five-year statewide project funded through CDC 1815 identified that patients in South Dakota are unaware of the term MTM and were generally unaware of enhanced pharmacy services such as medication packaging or synchronization. However, patients reported that these types of services would be beneficial to them and something they would utilize more frequently if they were aware of their existence. Thus, a need to improve awareness of various pharmacy-based services offered across the state was identified. The focus of this presentation will be on the second-year initiatives, specifically describing educational initiatives and quantitative measures developed to test the impact of these initiatives. Objective: The primary objective is to assess how providing various forms of education improves the knowledge of pharmacy services available to patients with diabetes and cardiovascular disease. The long-term objective is to increase utilization of these pharmacy services, with the intent to improve patient outcomes.

Methods: This project consists of a two-pronged approach that will be used in education development and implementation. The first will be a statewide campaign to target all South Dakotans with diabetes and cardiovascular disease. Educational materials in the form of billboards, TV and radio ads, along with other mass-market materials will be utilized to reach this population. For the second prong, approximately six individual communities throughout the state have been identified. Within these communities, educational patient handouts, posters in pharmacies, and more individualized materials will be distributed to patients utilizing pharmacies in these communities. The educational materials will be distributed from January through March of 2020 after being tested in small focus groups to determine effectiveness. While the focus of this presentation will highlight the educational materials used, a survey is also being conducted as part of this project. The survey will be distributed both before and after the educational materials are distributed in order to test the effectiveness of the education. Results from the pre-education survey will be descriptively analyzed and presented at APhA Annual 2020.

Preliminary Results: As we work toward provider status and legislative changes to reflect our role, it will be important to help our patients recognize our new professional role and seek out services that have been underutilized. At this time, educational materials are being developed based on thematic analysis from year-one results of the CDC 1815 project in South Dakota. Alongside these materials, a survey is also being developed to test the effectiveness of these educational materials. With implementation of these educational initiatives across the state and in specific communities, we hope patients will be more aware and educated on these topics and thereby motivated to actively seek and utilize them.

88-Pharmacist Consultation in Individuals with Chronic Idiopathic Constipation or Irritable Bowel Syndrome with Constipation: Results from the BURDEN-CIC and BURDEN IBS-C Surveys. Quigley E, Houston Methodist Hospital, Kim K, Salix Pharmaceuticals, Inc., Patel R, Bausch Health Employee, Harris L, Mayo Clinic-Scottsdale. Email: equigley@houstonmethodist.org.

Objective: Symptoms of chronic idiopathic constipation (CIC) and irritable bowel syndrome with constipation (IBS-C) have a quantifiable negative impact on workplace and school productivity, as well as quality of life, with the overall goal of treatment to relieve symptoms. With the wide availability of over-the-counter treatments for these conditions, individuals with CIC and IBS-C are likely to self-treat their constipation and may not present to a healthcare provider. Pharmacists can play a critical role in engaging with these individuals to address concerns and optimize treatment. The purpose of this analysis is to explore the use of pharmacists, in consideration of their position in the community setting, as medical consultants to patients with CIC and IBS-C.

Methods: The BURDEN-CIC and BURDEN IBS-C surveys were designed to better understand the experiences, attitudes, and unmet needs of patients with CIC or IBS-C. BURDEN-CIC and BURDEN IBS-C used proprietary databases to identify patients with CIC and IBS-C symptomatology, respectively, either by self-reporting a formal diagnosis of CIC or IBS-C or by fulfilling Rome IV criteria in the survey. Qualifying patients participated in an IRB-approved online survey. Both surveys were conducted between June 29, 2016, and January 30, 2017.

Results: There were 1223 participants with CIC and 1681 participants with IBS-C who completed the survey. Of participants with CIC and IBS-C who were not formally diagnosed (CIC, n=188; IBS-C, n=431), only 1.4% and 2.8% had ever discussed their symptoms with a pharmacist, respectively. Of participants with CIC and IBS-C who were formally diagnosed (CIC, n=1035; IBS-C, n=1250), 25.3% and 24.2% discussed their symptoms with a pharmacist, respectively. Diagnosed participants with IBS-C were more likely to discuss symptoms with a pharmacist after consulting a medical doctor, physicians' assistant, nurse, or nurse practitioner than beforehand (before, 10.4%; after, 13.9%). Prior to consulting a medical doctor, physician's assistant, nurse, or nurse practitioner, participants who had ever discussed their symptoms with any healthcare provider and had tried to manage their symptoms (CIC, n=1079; IBS-C, n=1347) had attempted various methods of treating their symptoms, including non-prescription over-the-counter medications (39.8% and 28.9%, respectively), probiotics or prebiotics (20.1% and 18.2%), fiber (40.5% and 41.3%), and stool softeners (36.8% and 28.5%).

On average, these participants had tried 3.4 (CIC) and 3.7 (IBS-C) over-the-counter products prior to talking to a healthcare provider.

Implications/Conclusions: Results from BURDEN-CIC and BURDEN IBS-C reveal that individuals with CIC or IBS-C who were not formally diagnosed are not utilizing pharmacists as a source of information for managing their symptoms, even though nearly half of individuals with CIC or IBS-C are using over-the-counter medications to treat their symptoms before consulting a medical doctor/PA/NP.

89-Evaluation of Patient Perceptions of a Standardized Curriculum of Opioid and Naloxone Counseling. Roberts J, Dorval E, Palm Beach Atlantic University, Simmons D, Atlantis Pharmacy. Email: roberjr@pba.edu.

Objective: Pharmacist-patient Collaboration: Evaluating Patient Perception of a Standardized Counseling Session for Opioids and Naloxone Background: Prescription opioid deaths have increased five-fold from 1999 to 2017 following the influx of synthetic opioids into the marketplace. Ensuring that patients know how to take their medications safely and effectively is one of the important responsibilities of a community pharmacist. A standardized counseling curriculum for opioids and naloxone can help pharmacists relay important information, and boost confidence in counseling skills. An effective approach for standardizing the opioid and naloxone counseling curriculum can be identified by using patient feedback, while also helping the pharmacist build rapport with patients. With the staggering number of deaths due to the opioid crisis, it is vital that patients understand their risk of overdose and how it can be prevented. The primary objective of this study is to utilize pharmacist-patient collaboration to develop an easily deliverable standardized counseling curriculum for opioids and naloxone that provides pertinent information to the patient. Secondary objectives are to utilize patient feedback to refine curriculum and to determine the number of patients who request naloxone following the standardized counseling.

Methods: The prospective study will occur at an independent community pharmacy in southern Florida. Patients recruited from the pharmacy will be included in the study if they are: eighteen years or older, taking ≥ 50 morphine milligram equivalents per day, have current prescriptions for substance abuse, or have other medications or disease states that can increase the risk for respiratory depression. Patients will be excluded from the study if they are less than eighteen years old or receiving opioid medications as part of hospice or active cancer treatment. The study will consist of three parts: 1) a standardized counseling session on opioid prescriptions with subsequent naloxone education, 2) a survey to gather demographic information and knowledge retained after counseling, and 3) a face-to-face patient questionnaire on how the counseling is perceived by the patient. The standardized counseling curriculum has been drafted from information gathered from the Centers for Disease Control, the Substance Abuse and Mental Health Services Administration, and the NARCAN Nasal Spray package insert. Information from the patient questionnaire will be evaluated as qualitative data, and used to enhance the standardized counseling curriculum. Curriculum changes, based off patient feedback, will be performed at 1, 2, and 3 months to allow for optimal development of the the counseling tool. Descriptive statistics will be used to evaluate demographic information, survey results, and naloxone requests. All collected data will be transposed into a password-protected Microsoft Excel file.

Results: Institutional Review Board approval is anticipated in October. Data collection will start in November 2019. Data analysis will begin in January 2020.

Conclusions: The goal of this study is to utilize the pharmacist-patient relationship to maximize a standardized counseling curriculum for opioids and naloxone. We aim to demonstrate how utilizing patient feedback to tailor counseling sessions will help pharmacists confidently communicate opioid information, increase patient awareness about opioids, and expand patient knowledge on combating the opioid crisis with NARCAN.

90-The Impact of a Pharmacist-Led Prediabetes Community Outreach Program. Shaver A, Austin K, Duquesne University School of Pharmacy. Email: shavera2@duq.edu.

Objective: The primary objective of this study is to demonstrate the impact of a pharmacist-led prediabetes community outreach program on patients' baseline lifestyle characteristics and increase in follow-up care. The Center for Disease Control and Prevention (CDC) reports that 33.4% of all Americans have prediabetes. Prediabetes is currently affecting almost 84 million people across the U.S. and can increase in the future due to an aging population, poor diets, and physical inactivity. Without appropriate management of prediabetes, patients can develop Type 2 diabetes. Prediabetes can be reversed through weight loss, physical activity, and eating a healthy diet. The CDC developed the National Diabetes Prevention Program (NDPP) to use evidence-based lifestyle modifications to prevent or delay Type 2 diabetes in patients with prediabetes. The NDPP is a year-long program taught by a trained lifestyle coach who provides education, encourages, and promotes a healthy diet, increase in physical activity, and stress management. The secondary objectives include, determining patient enrollment in the NDPP and program attributes after screening, linkages to health care professionals, initiation of prediabetic medication therapy, and motivation to change lifestyle patterns.

Methods: This study will use a mixed methods design. New patient data, including baseline weight and minutes of physical activity per week, will be collected using a pre-test and post-test. Patients will be recruited at community outreach events in Pittsburgh, PA and its surrounding areas. Eligibility criteria includes age greater than or equal to 18 years old, not previously diagnosed with any type of diabetes, not currently seeking treatment or management of prediabetes, and an ADA Type 2 Diabetes Risk Test score of greater than or equal to 5. Following informed consent, an eligible patient's blood sugar will be taken and the findings will be recorded. A telephonic interview form will be used to document patient response one month following the initial screening. If the study

participant enrolled in a NDPP, the following will be documented: location of program, sponsoring organization, cost, and any applicable incentives involved with participation.Chi squared and paired sample t tests will be utilized to help determine the percent increase in physical activity per week and change in weight. An iterative analysis on the collected data of study participants' motivation to change will be conducted by the research team. A maximum of three contact attempts will be made to the patient.

Results: Research in progress.

Implications: The purpose of this study is to demonstrate that pharmacist-led screenings in the community and referrals for care empowers patients to make positive health changes in their life to prevent Type 2 diabetes. These changes include increasing physical activity, enrolling in a lifestyle management program such as the NDPP, linking to a primary care provider, or starting a medication for prediabetes. Literature has not shown the impact of pharmacist led screenings for prediabetes in the community with referrals to care. This study aims to fill that gap and advocate that pharmacists are an accessible source to assist patients with prediabetes and have a positive impact in their care.

91-Developing and Testing an Opioid Safety Handout as a Resource for Pharmacists and Patients: A Mixed Methods Study. Thakur T, Airola T, University of Wisconsin-Madison. Email: tmthakur@wisc.edu.

Objective: Within pharmacy, we know and see potential roles and contributions for pharmacists in educating patients beyond dispensing. In the current opioid epidemic in the US, prescription opioid misuse and abuse are a significant contributor to overall opioid deaths. Pharmacists can help combat prescription opioid misuse by counseling patients about opioid risks and safety when they dispense an opioid prescription. While pharmacists have expressed an interest in offering opioid education services, they also report facing barriers like lack of training, resources and tools when dispensing these services. Use of written material in consults was desired by pharmacists in previous studies. This study aims to (1) refine a previously developed opioid safety handout and (2) assess and test the use of this handout in pharmacist-patient conversations about opioid risks and safety in the community pharmacy setting.

Methods: This study uses a two-phase advanced mixed methods design. In phase one Interviews were conducted with community pharmacists to refine the handout tool; in phase two a rapid evaluation of this refined handout will be conducted in 2 community pharmacies. Interviews: 8 interviews were conducted with community pharmacists using convenience sampling. Pharmacists discussed their current opioid risk counseling practices and gave feedback on the design and structure for the handout. Qualitative data were analyzed using inductive coding with NVivo. Version 14. Categories for codes were independently generated by two researchers. Themes were generated after consensus was reached on the categories among researchers. Rapid evaluation: The refined handout will be tested for three weeks using pharmacist surveys and field observations in two community pharmacies to assess the ease and impact of the handout's implementation in consults. Pharmacists will complete a short two-minute survey about the topics they covered in each opioid consult for a week and what impact, if any, the handout had on their satisfaction and comfort about initiating and discussing opioid risks after each opioid consult.

Results: The following themes emerged from phase 1 interviews: 1. Pharmacists reported not using any resource currently to facilitate opioid risk conversation. 2. All the pharmacists said they would benefit from this handout and reported using it as a guide and checklist for counseling about new opioid prescriptions before giving it to the patient as a resource. 3. Pharmacists suggested making the handout simpler, less wordy, replacing the term addiction with tolerance, mentioning naloxone as an opioid-antagonist and standardizing safe disposal practices as feedback on the handout. Phase 2 will be implemented in October 2019.

Implications/Conclusions: This study is a first step towards involving pharmacists as stakeholders in creating and testing an effective opioid safety handout that can benefit both pharmacists and patients as a resource. This handout can be further revised to accommodate requirements of pharmacists from other settings and states. Pharmacists have expressed the need for standardized tools and counseling for all patients, and this handout can be a first step in this direction.

92-Discussions About Psychotropic Medication Use for Latino Children with Mental Health Needs: Examining Parent-Provider Communication. Thomas K, University of North Carolina. Email: kathleen_thomas@unc.edu.

Objective: To describe communication about psychoactive medication use for Latino children in a Spanish language mental health clinic. Latino children with mental health needs face significant unmet needs. For example, among high-risk youth, Latino children were half as likely to report use of psychotropic medications than white children. Latino parents are concerned about benefits and harms, and these concerns are associated with reduced adherence once children are treated. However, there is limited evidence about how Latino parents communicate about psychoactive medications with their children's providers.

Methods: Data consisted of audio recordings of 194 conversations between parents and providers discussing psychoactive medication use for Latino children with mental health needs. The setting was a small Spanish language mental health clinic in a southeastern state. Data were transcribed and coded using an existing tool developed to assess provider, parent and child communication about medication use. Two team members read each transcript, developed coding definitions for the data, and coded the transcripts. The tailored coding tool included the following categories: (1) status of medication use at the beginning of the visit; (2) initiating medications; (3) child health and well-being; and (4) navigating costs. Inter-rater reliability was assessed through double-coding of 31 transcripts.

Results: Coders achieved kappa statistic scores ranging from .63 to .87. The sample of audio recordings (n=194) included a total of 56

transcripts for children prescribed at least one psychotropic medication and 138 transcripts for families considering medication as part of their child's mental health treatment plan. Latino families in our sample asked questions about psychotropic medication use in 34% of visits. Discussions about initiating medications include concerns about the duration of medication use, addiction, and side effects. Conversations about child health and well-being show parents use academic performance and child behavior to assess medication effectiveness. Lastly, discussions about navigating costs show that parents compare prices and navigate insurance gaps to make medications affordable for their families. Importantly, parents in this sample felt comfortable expressing concerns with their children's providers.

Implications/Conclusions: This evidence on the breadth of topics discussed by Latino parents is an important contribution and underscores the potential for achieving quality communication between Latino patients and providers. Further, although previous research emphasizes access barriers that Latino families face when considering psychotropic medications, these data provide new information on how Latino parents circumvent access barriers and advocate for their children. This study highlights strategies parents and providers can use to facilitate communication around medication use and adherence. Asking questions allows families to better understand the commitment that medication treatment requires. This open communication can also alleviate fears that parents and children may have and provides the opportunity for parents to learn how to avoid and manage side effects that might otherwise derail the treatment plan. Discussing outcome metrics is another key component of communication. Outcome metrics provide an anchor that parents and clinicians can use to share information critical to treatment planning. In partnership, families can discuss outcomes that matter to them including when and how they may be achieved.

93-Parent Caregiver Perceptions of Type 1 Diabetes Management Burden: Implications for Pharmacists. Wilson N, Kavookjian J, Hohmann N, Auburn University. Email: nzw0007@auburn.edu.

Objective: Pharmacists have a role in communicating with parents of children/teens with type 1 diabetes (T1D) about insulin treatment challenges and responsibilities. Parent/caregiver reported preferences, perceptions, and concerns for insulin use may inform pharmacist support strategies and content for interactions with parents/caregivers about treatment regimen and options, and may reduce caregiver burden and improve child/teen and family outcomes. The objective is to report results from a pilot study of parent-reported preferences, challenges, and family impact during their role as primary caregiver of a child/teen with T1D.

Methods: Parents who were enrolled in a larger study to enhance parent communication about self-management behaviors with their child/teen were recruited from a hospital-based endocrinology clinic (with a $50 incentive) to complete a cross-sectional survey of parent/family responsibilities, impact, and burden on parent caregiver and family dynamics from the complex management of insulin use and its associated requirements in treating T1D across the life and activities of a child/teen. The paper-based survey included established measures of perceived responsibility for and impact from T1D management, as well as perception of adequacy of available resources and support, and demographic and medical history variables. Descriptive statistics were generated (frequencies, means, correlations).

Results: Seven parents (of 10 possible) responded to the survey. Respondent parents were 57% female, 71% White/29% Black, all married, with a mean 2.57 children, and with mean age of 34.43 (+/-14.46). Their children with T1D were 5/7 female, with mean age of 12.57 (+/-3.51), duration of disease of 6.14 (+/-2.41), and 5/7 on an insulin pump. Highlights for variables showing most significant impact on parent, child and/or family included parent/caregiver feeling overwhelmed (n = 4), frustrated (n = 3), depressed (n = 2), stressed about the diabetes management responsibilities (n = 5), worried about complications (n = 7), or concerned about impact on other family members (n = 4). In addition, 3 of 7 reported a feeling of 'going it alone', 2 reporting no spousal support in T1D management responsibilities. Three of the seven reported concerns that their child/teen was not adherent with the insulin regimen or requirements, and two of these also reported less certainty about how well-controlled their child's T1D was. Three of seven reported not having resources they need to talk with their child about T1D management and/or staying on the pump, and on reported not having the information needed for optimal T1D management. One parent reported that getting the insulin and medication from their pharmacy was not easy, 3/7 reported lack of satisfaction with child's health insurance, and all agreed that managing T1D is expensive.

Implications/Conclusions: Parent/caregiver perceptions in this pilot study demonstrate potential topics that pharmacists are equipped to provide information/education for and also that pharmacists can be aware of and sensitive to in communicating with a burdened caregiver parent. Pharmacists informed with knowledge about these psychosocial and humanistic impacts can provide patient-/person-centered perspectives to help optimize treatment outcomes for the child/teen with T1D while also helping support a burdened parent/caregiver.

Compounding

94-Applications of Resonance Acoustic Mixing (RAM) in the Preparation of Compressed Tablets in Compounding. Nieves E, Nova Southeastern University. Email: nenrique@nova.edu.

Objective: Acoustic mixing is a relatively new technology commercially available for pharmaceutical compounding. It is mainly used for mixing liquid and semisolid formulations. A study conducted at Rutgers University by Osorio-Caicedo in 2014 showed that this technology can be also used for solids. The purpose of this study is to test and validate acoustic mixing technology in the preparation of the drug powder blend to simplify the process of making compressed tablets in a pharmacy compounding setting.

Methods: Mixing Trials Three (3) binary blends (drug and co-excipient) of 20 grams representing different mixing conditions were made in the acoustic mixer. The three mixing conditions were a combination of mixing times and intensity settings in the mixer: 10 seconds-low, 20 seconds-medium, and 30 seconds-high. Each test condition was conducted three times to test reproducibility. A dedicated mixing container was used for each of the nine (9) blends to prevent cross contamination. The pure drug subjected at the highest energy mixing condition (30 seconds-high) was used as control in a separate container. The binary blends consisted of a mixture of Acyclovir (25%) and Prosolv EasyTab (75%). Prosolv Easy Tab is a co-excipient configured for tablet manufacturing in large scale available commercially that contains the main pharmaceutical excipients in a pre-blend form to simplify the blending process. It contains microcrystalline cellulose, sodium stearyl fumarate, sodium starch glycolate, and colloidal silicone dioxide. Ingredient Addition in Blend Preparation The order of addition of the ingredients was considered important to achieve optimum results in the shortest mixing times possible and were added in sandwich form (excipient-drug-excipient). Compressed Tablets: Compressed tablets from each blend were made in a TPD-O manual press. They were analytically tested using the same HPLC method and compared to the blends used to make them. Analytical Method Five (5) samples from each test blend plus the control, and 5 tablets derived from them we analytically tested using a previously validated HPLC Stability Indicating Assay for assay a content uniformity following the USP method.

Results: Preliminary findings suggest that high quality compressed tablets can be produced in a pharmacy setting using acoustic mixing technology and a manual TDO-0 tablet press. This process make tablet compounding simple and feasible in a pharmacy setting. It involves only two steps and different number of tablets may be produced in a very short period of time.

Implications/Conclusion: Acoustic mixing technology may be applied in compounding pharmacy to make high quality blends for tablet and capsules formulated by pharmacists in doses not commercially available.

95-Physicochemical Stability of Compounded Allopurinol Suspensions in PCCA Base, SuspendItTM. Pramar Y, Mandal T, Bostanian L, Le G, T.C. Morris T, Graves R, Xavier University of Louisiana. Email: YVPRAMAR@XULA.EDU.

Objective: To study the stability of extemporaneously compounded allopurinol suspensions in the contemporary vehicle PCCA Base, SuspendIt. SuspendIt is a sugar-free, paraben-free, dye-free and gluten-free thixotropic suspending agent containing a natural sweetener obtained from the monk fruit. It thickens upon standing to minimize settling of any insoluble drug particles, and becomes fluid upon shaking to allow convenient pouring during administration to the patient. The study design included two concentrations to provide stability documentation over a bracketed range for eventual use by compounding pharmacists.

Methods: A stability-indicating HPLC assay of allopurinol in SuspendIt was developed and validated. Suspensions of allopurinol were prepared in SuspendIt at 10 mg/mL and 20 mg/mL concentrations, selected to represent a range within which the drug is commonly dosed. Samples were stored in plastic amber prescription bottles at two temperature conditions (5 degrees C and 25 degrees C). Samples were assayed initially, and at pre-determined time intervals as follows -7, 14, 30, 45, 60, 88, and 120 days. Physical data such as pH, viscosity, and appearance were also noted. All measurements were obtained in triplicate.

Results: A stable extemporaneous product is defined as one that retains at least 90% of the initial drug concentration throughout the sampling period. Allopurinol was stable for 120 days in SuspendIt at both temperatures. Drug concentrations were above 98% of initial values; minimal degradation was observed. The pH measurements were consistent (5.10 to 5.12). Viscosity measurements showed minor variability, ranging from an average of 62.5 cP to 57.8 cP for both allopurinol concentrations.

Conclusions: Compounded allopurinol suspensions at 10 mg/mL and 20 mg/mL concentrations in PCCA Base, SuspendIt were found to be physically and chemically stable for 120 days at 5 degrees C and 25 degrees C. The 180-day stability data is forthcoming. No commercial liquid dosage form of allopurinol currently exists. The study therefore provides a viable compounded alternative for allopurinol as an extemporaneous liquid dosage form, with an extended beyond-use-date. Acknowledgement: This study was sponsored by PCCA, and supported in part by the NIH Grant #2U54MD007595-l I, DHHS Grant #D34HP00006; and the Louisiana Cancer Research Consortium.

96-Implementing new Departmental Strategies to Comply with the Revised USP Chapter <797> Guidelines. Reynaud T, Essel C, Shabbir A, Harris K, Daly S, Johns Hopkins Bayview Medical Center. Email: tmapp2@jhmi.edu.

Objective: The objective of this study is to assess the impact of 4 interventions made in an inpatient pharmacy intravenous lab (IV) to address compliance with the new United States Pharmacopeia (USP) compounding chapter 797. USP 797 is scheduled to go into effect in December 2019; hospitals and various compounding institutions are working to ensure their facilities and personnel are in compliance. The new USP 797 chapter contains several changes; the most notable surrounding the frequency of testing of personnel, beyond use dating, and more definition surrounding conventionally manufactured products. With the enforcement of the new guidelines, institutions have to prepare for the financial implications that will come with training and testing of compounding staff.

Methods: This single-center prospective study looks at 4 interventions that were put into place in our IV lab during the timeframe of July 2019 through February 2020 that aimed to meet new compliance standards while being cost effective or budget neutral. Interventions included the formation of a compounding advisory group, the reclassification and updating of pharmacy personnel job descriptions, instituting department wide testing dates, and the use of pharmacy technicians that had received their certification in sterile compounding for testing and training of staff.

Preliminary/Final Results: Research in progress.

Conclusions/Implications: Data collection will occur thru February 2020 and data analysis will follow. The results of this study will encourage other institutions to identify cost savings methods that will help compliance with new guidelines.

97-Efficacy of Pharmacist's Compounded Low-Dose Naltrexone in the Treatment of Crohn's Disease. Rodriguez Zayas K, Ortiz B, Nova Southeastern University. Email: krz@gmail.com.

Objective: Crohn's is a chronic inflammatory disease that affects the gastrointestinal tract. According to the CDC, it is estimated that approximately 1.3% of the American population suffers from this condition and it is considered to affect men more than women. Naltrexone is an opioid receptor antagonist approved by the FDA in 1984 to treat opioid dependence and alcohol use disorder. It works as a competitive antagonist at opioid receptor sites, and has the highest affinity for mu receptors (μ) . Also, it has been attributed anti-inflammatory and immune-regulatory properties by blocking the macrophage-released tumor necrosis factor (TNF). As μ receptors are also present in the GI tract, it has been hypothesized that naltrexone decreases the inflammatory cell proliferation in the GI tract via tonic inhibition through the opioid axis. Findings from evidence-based literature report remission of Crohn's disease after a 12 week regimen of low-dose oral naltrexone in a sample of adults and pediatric patients. The purpose of this study is to assess the efficacy and tolerability of a pharmacist's compounded extemporary formulation of low-dose naltrexone in the treatment of Crohn's Disease.

Methods: A descriptive pilot study will be conducted among a convenience sample of five patients > 18 y/o with a positive diagnosis of active Crohn's disease by a certified gastroenterologist in Puerto Rico. Active disease will be confirmed by the co-investigator physician using imaging and/or endoscopic findings, as well as a Crohn's disease activity index (CDAI) > 150. As per the physician's discretion, eligible patients will receive a prescription for an oral extemporaneous formulation of low-dose naltrexone which will be compounded at Santa Cruz Pharma Care pharmacy. Prescriptions will refilled at the local pharmacy for 12 consecutive weeks. Patients will be assessed by the physician at baseline, week 4, 8 and 12 to evaluate tolerability and safety of the compounded formulation. Inform consent will be obtained from each participant or its legal representative prior the study.

Results: In progress.

Implications/Conclusion: To our knowledge, this will be the first pilot study conducted in Puerto Rico that will evaluate the use of a pharmacist's compounded low-dose naltrexone in the treatment of Crohn's disease. If positive findings results from this investigation, the accessibility of this novel treatment will be increased for patients suffering from this condition in the island. It would also enhance the role of the community pharmacist in partnering with physicians to improve the access of this promising treatment to patients at a lower cost.

98-Evaluation of In-Vitro Permeability of Gabapentin, Baclofen, and Meloxicam in Compound Transdermal Poloxamer Gel Pain Formulations. Utin E, Bush B, Morris T, Xavier University of Louisiana. Email: eutin@xula.edu.

Objective: The objective of this study is to determine if the presence of multiple analgesic drugs in a single topical formulation will hinder (or improve), each drug's dissolution and permeation rates. Physicians prescribing multicomponent pain-related topical creams and gels have become commonplace in an attempt to find alternatives to opioid pain relievers. Combination drug formulations provide a means of simultaneously dosing analgesics with different mechanisms of action to target pain relief in a single dose. So, creams and gels containing non-steroidal anti-inflammatory agents, muscle relaxers, neuropathic pain agents, local anesthetics, and a host of other agents are being combined with this strategy to offer pain relief with compounded products that are dispensed to patients. We realize that the skin is a protective barrier and may prevent complete absorption of one or more of these drugs in a multi-component product.

Research Questions/Objectives: Our study will determine if a compounded topical combination product, i.e., containing 3 different drugs (baclofen, gabapentin and meloxicam) can be absorbed through the skin simultaneously and equally at a rate equivalent to the absorption seen when they are topically applied individually.

Methods: Four different gels, a 6% w/w gabapentin gel, 0.25% w/w meloxicam gel, 0.4% w/w baclofen gel and a combination gel containing all three drugs and their respective concentrations have been prepared. All of the gels were made so that they contained 25% w/w poloxamer 407 to ensure the gels would be physically stable and translucent. In vitro release and permeability studies for all four gels will be performed using a Franz-type vertical diffusion cell system with a magnetic stirrer, a thermostatic water bath and an auto-sampler (Microetter, Hanson Research Corporation, USA). The diffusion cells with water jackets were connected to a thermostatic water bath and maintained at 32.5 degrees Celsius. The receptor chambers of the diffusion cells were filled with 0.1 M phosphate-buffered saline and stirred at 400 rpm. 0.45 micron membrane filters were used to assess in vitro release/dissolution of the formulation. We will be using Strat-M Membranes (Millipore Corporation, USA) to assess permeability properties. Approximately 1.3 cm 2 of the gel is applied to the filter. The gel and filter are then mounted on top of the diffusion cell and fastened with a rigid clamp. 1 mL samples will be removed from the vertical diffusion cell receptor chamber (and replaced with buffer solution) at 8 time intervals over a 12 hour time span. Each gel formulation will be tested in triplicate. The samples were assayed utilizing a Shimadzu LC-2030C 3D Plus HPLC System.

Preliminary Results: From the preliminary data collected, the results reveal that the dissolution rate and/or the extent of release from

each drug are not the same as that seen when each drug is tested individually. Gabapentin's release in the triple pain gel formulation was hindered by the presence of baclofen and/or meloxicam. We are currently investigating the cause of this phenomenon. We will share our findings from the investigation as well as the results of the permeability portion of our study.

Diabetes

99-Adherence to Updated Metformin Dosing Recommendations in a Patient-Centered Medical Home: A Comparison of Provider-Pharmacist Team vs. Provider-only Approaches. Albanese N, Monte S, University at Buffalo, Lipinski H, Department of Veterans Affairs. Email: npaolini@buffalo.edu.

Objective: In 2016, the FDA required metformin labeling updates to expand use in patients with mild-moderate renal impairment based on glomerular filtration rate rather than serum creatinine. The study objective was to determine if a difference exists in adherence to metformin renal dosing recommendations between patients managed by a provider-pharmacist team vs. providers alone in a patient-centered medical home.

Methods: The study protocol was approved by the Institutional Review Board. Electronic medical records of patients on metformin from 4/8/16-10/31/18 were reviewed to identify dosage changes or discontinuations. Charts of patients with dose decreases or discontinuations were reviewed to determine the reason and appropriateness. The proportion of subjects appropriately adjusted due to renal changes was calculated and compared between patients managed by a provider-pharmacist team vs. providers alone to determine if a difference exists using chi-squared test. Alpha was set at $P<0.05$.

Results: There were 10,317 patients with a metformin prescription between 4/8/16-10/31/18 identified. Of those identified, there were 109 cases among 107 unique patients of dose decreases or discontinuation due to renal function. Renal dosage changes were determined appropriate in 26 of the 29 cases managed by a provider-pharmacist team (90%) vs. only 39 of the 80 cases managed by providers alone (49%). The difference between groups was found to be statistically significant ($P = 0.00012$).

Conclusions/Implications: Results confirm higher rates of adherence to metformin renal dosing recommendations in patients managed by a provider-pharmacist team vs. providers alone, suggesting that pharmacist intervention and education on updated dosing recommendations may be beneficial.

100-Evaluation of Care and Screening for Type 2 Diabetes in Women with a History of Gestational Diabetes (GDM) at Federally-Qualified Health Center. Alshammari H, Kennedy A, University of Arizona, Rowen M, Holloway D, Murphy C, El Rio Health. Email: hisham.alshammari@westernu.edu.

Objective: The American Diabetes Association (ADA) Standards of Medical Care in Diabetes recommends screening patients who are at risk for diabetes at first antenatal visit and screen asymptomatic pregnant women between 24 and 28 weeks of gestation. Uncontrolled GDM has negative implications for both the mother and unborn baby such as pre-eclampsia and large birth weight (macrosomia), which may require caesarean section. Moreover, GDM is associated with development of type 2 diabetes later in mother life. This study will evaluate the current trends screening for type 2 diabetes post-delivery and time interval from delivery to screening in women with a history of gestational diabetes (GDM) and identify gaps in care to implement procedure to provide optimal care to El Rio patients.

Methods: The Electronic Health Record (EHR) will be retrospectively reviewed, and data collection will be limited to patients who received care at El Rio for women's health service between the dates of 1/1/2017 and 12/31/2019. Patients with a diagnosis of gestational diabetes will be identified using the following ICD-10 codes: O24.410, O24.414, O24.415, and O24.419. Eligible patients will be evaluated based on GDM visits, A1C monitoring results (values and frequency), and postpartum follow-up and diabetic screening within 24 weeks post-partum. Data related to specialty referrals that are generated specifically for pregnancy complications and/or GDM management, both internally and externally will be collected. Medications prescribed for GDM management, including insulins, metformin, and glyburide will be documented. Postpartum follow-up and screening for diabetes, or evidence of order to screen for diabetes generated, within 24 weeks post-partum will be tracked. Inclusion criteria include:1) female patients ≥18 years old; 2) patients receive care at El Rio for women's health service between the dates of 1/1/2017 and 12/31/2019. Exclusion criteria include: 1) Patients <18 years old; 2) Women who do not use El Rio health for medical care after delivery.

Preliminary/Final Results: Currently undergoing the IRB review process.

Conclusions/Implications: The intended implications for this research study are to evaluate the current trends in care and screening for type 2 diabetes in women with a history of gestational diabetes (GDM). Understanding how GDM is currently managed at El Rio will help us identify gaps in care and potentially implement procedures and protocol to improve the care provided to our patients dealing with GDM and as they transition back into primary care. Additionally, we will look at the potential role for a pharmacist in GDM management.

101-Assessment of Influence of Patients' Disease Knowledge on Diabetes Health Outcomes in Terms of Glycated Hemoglobin (Hgba1c) Control in Riyadh. Saudi Arabia. Alsuwayni B, King Saud University Medical City. Email: balsuwayni@outlook.com.

Objective:: Diabetes mellitus is a chronic condition requiring continuous care. It is considered the fifth leading cause of death in Saudi Arabia with a prevalence of 18.5% in 2017. This percentage is estimated to reach 25% by 2030. The management of diabetes largely

depends on the affected person's ability to pursue self-care in daily living. Successful care requires patient disease-knowledge and self-management, including adherence to medication, self-monitoring, and healthy lifestyle modifications. In several trials, disease-knowledge had shown improvement in diabetes outcomes with consequent improvements in attitudes and skills, leading to better control of diabetes, and reduce diabetes care and better quality of life. This study was conducted to investigate the effect of patients' disease-knowledge on diabetes outcomes in terms of glycated-hemoglobin (HgbA1C) control among Saudis.

Methods: A questionnaire-based cross-sectional study conducted at an academic tertiary hospital in Saudi Arabia, including 400 adult diabetic patients of both type I and II, and with or without complications, excluding gestational diabetics, non-Arabic speakers, and patients with any documented diagnosis of conditions could interfere with accuracy of assessment. Patients with diabetes recruited by pharmacists from outpatient pharmacy in the hospital after signing an informed-consent form. Enrolled patients completed a self-administered questionnaire assessing their disease-knowledge. The questionnaire consisted of 30 questions where one point scored to each correct answer. By consensus, a low-level of knowledge agreed to be for scores of 0-9 points. Moderate-level for scores of 10-19 points. Whereas high-level was for scores of 20-30 points. The effect of disease-knowledge on HgbA1C control derived from patient's medical record. Descriptive analyses used to report the influence among different variables. Diabetes control among different knowledge levels assessed by mean HgbA1C±standard deviation.

Preliminary Results: Up-to-date, study included fifty adult diabetic patients of both type I and II diabetes (64% and 36%, respectively). The majority of sample were females (58%). Among study participants, four percent of participants had a low-level of knowledge, 54% had a moderate-level of knowledge, whereas 42% had a high-level of knowledge. Forty-four percent of the moderate-level of knowledge group were aged between 46-60 years old. Thirty-three percent of the patients with high level of knowledge are from 26-45 years old, and 33% of them are aged between 46-60%. Of the high-level of knowledge group, the percentages of type I and type II were almost the same with an average HgbA1C of 8.78%±1.68%. Similarly, those with moderate-level of knowledge, where majority were type II diabetics (63%), had an average HgbA1C of 8.83%±1.67%. Fifty percent of low-level of knowledge are type II diabetes patients and had an average HgbA1C of 9.32%±2.02%.

Conclusion: Majority of our sample had a moderate-level of knowledge. However, both moderate-level of knowledge and high-level of knowledge had similar diabetes control in terms of HgbA1C that were better than the low-level of knowledge group. Data will be re-reported by completion of study. We recommend putting more efforts on patient disease-knowledge improvement that is positively influencing diabetes control. We also recommend conducting study over multi-centers in Saudi Arabia to have nationwide results.

102-Indiana Pharmacist's Perceptions of Diabetes Self-Management Education and Support (DSMES), Diabetes Prevention Program (DPP), and Medication therapy Management (MTM) Services: A State-Wide Study. Bessler K, HealthLinc/Purdue University, Gonzalvo J, Purdue University. Email: kbessler@healthlincchc.org.

Objective: The objectives of this study are to 1) determine Indiana pharmacists' interest in starting, expanding or maintaining diabetes self-management education and support (DSMES), diabetes prevention program (DPP), and medication therapy management (MTM) services, and 2) determine the barriers identified by Indiana pharmacists' regarding the develop, expansion or maintenance of DSMES, DPP, and MTM services. The prevalence of diabetes continues to grow and affects over 100 million people in the United States. DSMES and DPP services are necessary tools to prevent or delay long term complications associated with diabetes and MTM services entail the assessment and evaluation of patient's medication therapy regimen. These services have been shown to improve clinical and economic outcomes, the identification of factors that influence these services is essential to optimize health care for Indiana residents.

Methods: A cross-sectional statewide survey of Indiana pharmacists will be conducted from November 2019 – January 2020. Study procedures were submitted to the institutional review board and are expected to be approved in October 2019. The survey will be sent out through the Indiana Pharmacy Association (IPA) to current members who are licensed pharmacists and practicing in the state of Indiana. Respondents were asked questions regarding demographics, current credentials held, current practice setting, and location. The survey will be broken down into three main parts (DSMES, DPP and MTM services) and will utilize branch logic. For each service, data collected will include information about existing services, pharmacists' interest in these services and barriers identified when developing, expanding or maintaining these services. Respondents answered dichotomous, 5-point Likert scale and multiple-choice questions. Additionally, pharmacists will be asked to voluntarily provide their email address and pharmacy practice site. This information will be used to determine the geographic areas that offer these services and the saturation of these services in regions of Indiana. The survey will be available for six weeks and a reminder email will be sent at weeks two and four. Data from this survey will be shared with the Indiana State Department of Health for the overall goal of expanding DSMES, DPP and MTM services across the state of Indiana. The survey will be sent to around 600 Indiana pharmacists with an unknown response rate. Descriptive statistics will be utilized to analyze the survey responses. Chi squared tests will be performed to test for relationships between different practice settings and responses. The statistics department at Purdue University will be utilized to help analyze the data and determine significance.

Preliminary Results: Preliminary findings and trends will be presented at the APhA Annual Meeting.

Implications/Conclusions: Information gathered from this study will identify interests in and barriers to starting, expanding and

maintaining DSMES, DPP and MTM services with the overall goal of expanding these services across the state of Indiana.

103-Prescriber Perceptions of Metformin Use for Prediabetes. Bode L, Albany College of Pharmacy and Health Sciences. Email: laurenbode2016@gmail.com.

Objective: This prescriber perceptions survey of the use of metformin for the prevention of T2DM is designed to elucidate patterns of use and underuse of this therapy. The information gleaned from this study will be used to shape educational initiatives for prescribers about the appropriate use of metformin for prediabetes. The rising prevalence of diabetes is widely recognized as one of the major challenges facing public health worldwide. Over a third of the US currently meets criteria for prediabetes, with up to 70% of those projected to progress to type 2 diabetes mellitus (T2DM). Even though metformin has been recommended for many years as a modality for the prevention or delay of T2DM by the American Diabetes Association (ADA), metformin is prescribed to less than 1% of patients at risk for developing diabetes. The discrepancy between guidelines and practice has been seen in other areas of prediabetes care. In one analysis, physicians were surveyed about their knowledge and use of ADA guidelines for screening and treatment of prediabetes. Over a third of physicians who reported good adherence to the ADA guidelines were actually found to have less than 50% adherence when the corresponding patient charts were reviewed. Additionally, there is evidence that suggests prescribers routinely underutilize metformin even for treatment of diabetes, often due to misconceptions about benefits and risks of therapy.

Methods: Potential respondents will be sent an email inviting them to participate with a cover letter and a link to the survey. It is planned to send the survey to a convenience sample of primary care practices diversified by geographical region and practice type i.e. academic, private, federally qualified health center, etc. The planned survey distribution target is approximately 200 primary care prescribers (physicians, nurse practitioners, physician assistants, and pharmacists). Anticipating an overall response rate of 25%, this would result in approximately 50 survey responses. Prescriber attitudes will be assessed with a 5-point Likert scale (strongly agree to strongly disagree) to evaluate belief in prediabetes as diagnostic construct, benefits of metformin for preventing or delaying T2DM, risks of metformin therapy, among others. Clinical scenarios will also be presented and respondents asked to indicate the likelihood they would prescribe metformin in that case. Prescriber characteristics and responses will be analyzed with descriptive statistics.

Preliminary Results: Existing data on this subject is limited. However, what evidence is available reveals some inconsistencies in prescriber perceptions of the use of metformin to prevent or delay T2DM. In one study, 70% of prescribers cited lack of awareness of metformin for this use, though an even larger percentage (89.1%) cited patients disliking taking medication as a reason for not prescribing. However, when asked, patients themselves are willing to take metformin, revealing a need for better understanding of limitations.

Implications/Conclusions: A survey focused on prescriber perceptions of metformin use for prevention of T2DM would yield more nuanced information about the subject than what is available currently. Subsequently, this understanding would be essential for creating educational programs about the appropriate use of metformin for this indication.

104-The Utility of Continuous Blood Glucose Monitoring in a Primary Care Setting. Bui A, University of North Carolina, Kim J, Cone Health Internal Medicine. Email: chaubui@unc.edu.

Objective: Diabetes is one of the most prevalent non-communicable diseases in the US. In 2015 alone, the CDC estimated that 23 million adults had been diagnosed with diabetes, with 7 million more Americans undiagnosed. Self-monitoring of blood glucose (SMBG) is the conventional method for managing diabetes, but it may not be the most effective strategy. SMBG relies on patient-reported information, and they may not capture hypo-or hyperglycemic events. The recent development of continuous glucose monitoring (CGM), which uses interstitial glucose levels to report glucose readings, has allowed for further diabetes control. CGM provides glucose readings on a round-the-clock basis and helps to show trends in BG levels over a prolonged period of time. This allows clinicians to make targeted interventions for their patients. Previous studies have demonstrated the benefit of CGM in both Type 1 and Type 2 diabetics, but the utility of CGM in a primary care setting requires further evaluation.

Methods: This is a prospective observational analysis and quality improvement project using descriptive statistics for data evaluation. Investigators abstracted data from patients who have used CGM devices in the Internal Medicine Clinic and the Family Medicine Clinic at Moses Cone. Candidates for CGM were also identified through electronic health records. Patients were asked to follow-up with their clinicians at week 1 and 2. Clinicians downloaded the data collected from the CGM device and used the information to make necessary interventions during the visit. Primary outcomes were change in average BG levels. Secondary outcomes were change in pre-and post-A1c, frequency of hypoglycemic events and types of interventions made during weekly visits.

Results: Primary outcomes: The study showed an average 11.1 mg/dl reduction in BG levels between week 1 and week 2, and an average 0.5% reduction in A1c between pre-and post-CGM. Secondary outcomes: Average hypoglycemic events increased in week 2 compared to week 1 (3.3 v 2.3). About 1/5 of patients on CGM required more than one intervention during their follow-up visits. Interventions included patient education, switching agents, adding agent(s), stopping agent(s), reducing dose of agent(s), and increasing dose of agent(s).

Conclusion: This study showed that close monitoring of BG trends with CGM allows clinicians to make better informed interventions that can improve patient outcomes. On average, patients experienced lower BG and A1c levels after 2 weeks of CGM. The CGM device

also recorded both the frequency and duration of hypoglycemic events, which may have gone undetected in a conventional SMBG method. While hypoglycemic events increased at week 2, the cause may be multifactorial. Patient adherence to weekly interventions were not closely monitored in this study. It is possible that patient non-adherence and poor diet may have affected BG trends. Aggressive treatment of patients with hyperglycemia after week 1 may also have caused more hypoglycemic events during week 2. It is uncertain if CGM causes more hypoglycemic events than SMBG, because this study only included patients using a CGM device. Thus, further studies should be conducted directly comparing these methods in a primary care setting.

105-Impact of the Utilization of Continuous Glucose Monitoring Devices on Patient-Reported Treatment Satisfaction. Currington D, Aboemeara M, Walgreen Co, Giblin E, Campbell University. Email: dmcurrington0929@email.campbell.edu.

Objective: The primary objective of this study is to assess the level of satisfaction in patients with Diabetes Mellitus (DM) who utilize a Continuous Glucose Monitoring (CGM) device compared to patients who practice Self-Blood Glucose Monitoring (SBGM) via finger sticks. Level of satisfaction is measured based on results of the Diabetes Treatment Satisfaction Questionnaire (DTSQ). The DTSQ is an 8-item questionnaire to assess both patient satisfaction with their current lifestyle & pharmacotherapy treatment for diabetes as well as any burden due to hypo/hyperglycemia. Previous research completed in health care settings other than community pharmacy has expressed a negative association between treatment satisfaction and factors such as inpatient wait time, distance traveled to receive health care, or no association at all after initiating CGM technology to improve A1c levels. While other studies using CGMs focused on improvement in A1c, no previous research solely focused on the patient's level of satisfaction with their treatment regimen was identified.

Methods: This multi-center, prospective, non-randomized cohort study will include patients with DM who monitor their blood glucose via SBGM or CGM. Internal pharmacy data and prescription fill history will be utilized to determine study inclusion eligibility. Eligible patients will be contacted via phone by the principal investigator if they have a medication adherence task in the pharmacy clinical consultation management portal or during prescription pick up to receive a description of the research study and provide consent. The principal investigator will attempt to reach patients 3 times before their data are excluded from the study. Enrolled patients will be administered the DTSQ via a paper survey in-store or verbally over the phone. Results of the DTSQ will be compared in patients who use SBGM versus those who use a CGM for glucose monitoring. The primary endpoint will be compared using a non-paired t-test.

Preliminary/Final Results: Research is in progress.

Conclusions/Implications: Will be determined upon completion of project.

106-Insulin Access in an Urban Underserved Population. Ehlers R, Valentino A, The Ohio State University, Seifert J, Jones S, Fahey H, The Charitable Pharmacy of Central Ohio. Email: ehlers.61@osu.edu.

Objective: The purpose of this study is to explore insulin access in an urban underserved population who fill prescriptions at a charitable pharmacy. Insulin access poses a crisis for many uninsured and underinsured patients, leaving some with no choice but to switch between insulin products from month to month or completely go without insulin altogether. Insulin is a vital medication, and going without it can lead to microvascular and macrovascular complications associated with diabetes as well as an increase in morbidity and mortality. Before we can start to improve access to insulin for patients, we must first identify what barriers they experience throughout the process. Specific objectives of this study are to 1) identify methods patients are using to access insulin; 2) identify barriers to insulin access; 3) identify shared characteristics of patients with insulin access issues; and 4) explore the extent to which problems with insulin access impact a patient's need to connect with acute health care services.

Methods: This observational study is intended to be descriptive in nature. Data will be gathered from electronic surveys completed by patients who fill their prescriptions at an outpatient charitable pharmacy and self-identify that they have been diagnosed with diabetes and have ever been prescribed insulin. Demographic data including age, race, insurance status, United States citizenship/residency status, and monthly income will be collected. The survey instrument will include multiple choice questions to gather methods used by participants to access insulin, barriers to insulin access, and the impact of poor insulin access on patients. Survey responses will be analyzed using descriptive statistics.

Results: Research in progress.

Conclusion: The results of this study are intended to provide an understanding of how patients at an outpatient charitable pharmacy are accessing their insulin and the barriers they face to insulin access. This information will be shared in aggregate with area health systems, community organizations, donors, and the healthcare community nationwide, in order to provide more information about the problem and request support for solutions to insulin access that target the most vulnerable patients.

107-Prevalence of Food and Healthcare Insecurity in People with Diabetes. Evans E, Big Y Pharmacy & Wellness Center, Mattison M, Shcherbakova N, Parsons K, Capoccia K, Western New England University. Email: ebony.evans@wne.edu.

Objective: The objective of this study is to determine the prevalence of food and healthcare insecurity in people with diabetes at a community clinic. Food insecurity is the absence of having physical and economic access to sufficient, safe, and nutritious food to meet the dietary needs and food preferences for an active and healthy life; and is classified as high, marginal, low, or very low. There's an abundance of research showing food insecurity can have a negative impact on health outcomes, including in diabetes. There is a

disparity in glucose management between levels of food security, with higher levels of food insecurity coinciding with higher doses of insulin and higher A1c levels. According to a study by Tomsik and colleagues, healthcare insecurity is described as feeling uncertain, anxious, or vulnerable about the ability to obtain or sustain adequate healthcare services. Risk factors that make healthcare less secure include skipping doctor visits or forgoing prescriptions due to cost, lacking insurance coverage, or having a pre-existing health condition. Healthcare insecurity is associated with poorer health related quality of life and greater mental distress.

Methods: The Consultation and Wellness Center, a pharmacist run community clinic in Springfield, Massachusetts provides an accredited diabetes self-management education (DSME) program at no cost to the community. Two validated surveys will be administered to people with diabetes at the Center which they may complete before or after their appointment and may place in a locked box located in the waiting room upon completion. The two validated surveys are the U.S. Adult Food Security Survey and the Veterans RAND 12 (VR-12) item health survey, assessing food and healthcare insecurity respectively. The U.S. Adult Food Security Survey places participants into groups of high, marginal, low, or very low food security based on the sum of affirmative responses. The results of the VR-12 are summarized as two scores; a Mental and Physical Component Score. Participant demographics (age, gender, race, education level, marital status, size of household), diabetes profile (type of diabetes, number of years since diagnosis, A1c history), along with the number of visits to the Center will be collected. This study is approved by the Western New England University Institutional Review Board.

Results: All completed surveys will be scored according to the respective scoring rubrics. Descriptive statistics (means, frequencies) will be reported for all variables collected. The prevalence of food and healthcare insecurity will be measured and compared to baseline demographics to evaluate for predictors of food and healthcare insecurity. Student's t-and chi-square tests will be used to compare groups. An alpha level of 0.05 will be employed.

Conclusion: The prevalence of food and healthcare insecurity will be quantified in this community. Identified predictors of these insecurities will allow the pharmacist to create targeted interventions in a DSME program to better care for and address the needs of people with diabetes.

108-Food as Medicine: How Grocery Store Pharmacists Can Work in an Interdisciplinary Team to Improve Type 2 Diabetes Through Health Coaching and Technology. Fard L, Ralphs/ University of Southern California, Fard L, Ralphs Pharmacy. Email: lfard@usc.edu.

Objective: The primary objective of this study is to assess the impact of health coaching from an interdisciplinary team based on HgA1c, BMI/weight, average self-monitored blood glucose (SMBG) in participants with type 2 diabetes (T2DM). Secondary objectives are to assess participants' health literacy and willingness to use technology to help change lifestyle and determine pharmacists' perception of the use of a nutrition application as a counseling tool for eating healthier. Background: Self-management of T2DM plays a crucial role in controlling and preventing complications associated with the disease. In a study by Oakes et al, the biggest barriers to success were resources in the local community and having an active support group. The biggest facilitators included healthy food and personal understanding of the disease. Pharmacies that exist in a grocery store have the ideal setting to break barriers and promote facilitators. These pharmacists have the opportunity to better support patients by showing them how to choose healthy options while providing the education, support, and resources that are needed to improve T2DM. With the support of many healthcare professionals working as a collaborative team, persons with diabetes can successfully meet their goals and reduce complication. Using technology or digital health products that train people to choose healthier lifestyle options by tracking the food they purchase, can guide people to be accountable for their lifestyle options. A regional division of a large community pharmacy chain will be partnering with a physician network group through a program called Eat Smart Rx. This program will provide mandatory education courses on diabetes self-management. After the completion of these courses, the participants will be provided bi-weekly food boxes to encourage healthy eating habits. A goal of the program is to adopt a "food as medicine" approach to address medical and social determinants of health with the help of an interdisciplinary team and a nutrition application, a mobile assistant for healthier shopping.

Methods: Twenty-five Medi-Cal members diagnosed with T2DM with uncontrolled HgA1c will be recruited to enroll in a prospective study to observe change in HgA1c, BMI/weight, SMBG, and nutrition application score throughout the EatSmart Rx program. Data collection will be from January 2020 to March 2020. HgA1c will be collected at baseline and 3 months. BMI/weight, SMBGs, and nutrition application score will be collected at baseline, 1.5 months, and 3 months. Education courses and data collection will be completed at a community pharmacy in Granada Hills, California. An entrance survey will be given prior to program to assess willingness to participate, health literacy, and access to technology. Primary outcomes measured are improvements in Hg1Ac, BMI/weight, SMBG, and increase in nutrition application score. Primary outcome will be compared to baseline and analyzed using a paired t-test. Secondary outcomes address the barriers for noncompliance and usefulness of technology to improve primary outcomes.

Preliminary/Final Results: To be determined.

Implications/Conclusions: To be determined.

109-Blood Glucose Control in Underserved Diabetic Patients. Farran A, Axesspointe. Email: afarran@neomed.edu.

Objective: To evaluate whether the use of continuous glucose monitoring (CGM) compared to traditional self monitoring will improve blood glucose control in underserved patients with diabetes. Background As the prevalence of diabetes mellitus is increasing globally,

it is increasingly challenging to find novel therapeutic options to control this rampant chronic health condition. Controlling blood glucose in diabetes is a key component in preventing complications. Self monitoring of blood glucose levels typically requires a sample of blood in addition to a glucometer, which is a measurement device. Many patients find it uncomfortable to test due to various reasons, mainly pain/discomfort as a result of using the lancet. In a study based on questionnaire conducted in Europe, 52.5% of patients were found non-compliant to traditional blood glucose testing. Within the past 15 years, Continuous Glucose Monitoring (CGM) has enabled patients to measure blood glucose at close intervals. This technology is more convenient for patients and provides tighter blood glucose control. This device functions by using a sensor which measure the blood sugar continuously up to 14 days. In general, CGM devices provide a more comprehensive evaluation of glycemia, can respond quickly to abnormal glucose levels, and have demonstrated improvements in HbA1c. This study seeks to assess if the use of CGM could help in improving glycemic control for patients with diabetes mellitus in a Federally Qualified Health Center (FQHC).

Methods: The purpose of the prospective, open label study is to further evaluate the effect of using CGM in patients with uncontrolled diabetes in underserved areas. Patients from five FQHC locations will be invited to enroll in this study. Qualifying patients will have seen an FQHC provider within the last 6 months. The 'home sites' are defined as the locations where the patient has an appointment with their pharmacist. Pharmacists will have utilized a standardized protocol to select patients eligible to participate. Patients will voluntarily provide informed consent to participate. If consented, the pharmacist then will schedule an appointment with the patient to administer the CGM device. The pharmacist will provide education to the patient regarding how the device works, expectations, and follow up processes which will occur every other week. After each follow up encounter, blood glucose levels will be monitored and recorded, and pharmacologic treatment will be adjusted accordingly. The HbA1c value will be measured after a period of three months and compared to the baseline HbA1c. The primary endpoint of this study is the HbA1c. The secondary endpoints will include fasting blood glucose levels and the patients' satisfaction with the CGM which will be done via a survey given to the patient.

Results: To be available upon completion of data collection.

Implications/Conclusions: To be available upon completion of data collection.

110-Impact of Pharmacist Interventions on Diabetes Management in an Underserved Population. Flood A, Miller D, Nguyen K, Wilkes University. Email: alexa.flood@wilkes.edu.

Objective: More than 30 million Americans have diabetes. Diabetes currently ranks as the seventh leading cause of death in the United States due to a variety of micro-and macrovascular complications. As a result, appropriate medication management and monitoring is vital to achieve and maintain adequate glycemic control. Pharmacists play an active role in diabetes management, especially in collaborative drug therapy management (CDTM) models. While CDTM has been established in a number of healthcare systems, this retrospective analysis focuses on the impact of a pharmacy-managed diabetes service within an underserved population at an outpatient Volunteers in Medicine (VIM) clinic. Objectives: To evaluate the effect of pharmacist-driven CDTM on patients with diabetes by examining hemoglobin A1c (HbA1c) levels and appropriateness of medications.

Methods: A retrospective chart review will be performed on all patients enrolled in the pharmacy-run diabetes management clinic at VIM from August 1, 2018 to August 31, 2019. Change in baseline HbA1c, cholesterol, blood pressure, and weight will be evaluated using descriptive statistics. Additionally, the number and type of pharmacist intervention will be tracked with each visit.

Preliminary/Final Results: In-progress.

Conclusions/Implications: In-progress.

111-Evaluation of the Management of Patients Using U-500 Insulin by Pharmacists in a Federally-Qualified Health Center—A Retrospective Analysis. Hudoba D, Boyle J, Northeast Ohio Medical University, Awad M, Rentsch T, AxessPointe Community Health Centers, Gothard D, BIOSTATS. Email: dhudoba@neomed.edu.

Objective: This program review is to evaluate the effectiveness and safety of the management of severe insulin resistance by a pharmacist. A small, but increasing subset of patients with diabetes mellitus, are classified with severe insulin resistance indicating treatment with U-500 insulin. The patient population for this study is patients at one Federally Qualified Health Center (FQHC). Of those patients with a diagnosis of diabetes mellitus at this site, approximately forty have a history of severe insulin resistance. Traditionally, barriers for the adoption of U-500 management have been frequent monitoring, greater risk of hypoglycemia, and dosing errors leading to coma or death. Many patients managed by FQHCs have limited access to care due to restrictions in transportation, access to quality food, lower rates of health literacy, limited income, and are either underinsured or uninsured. Pharmacist integration as members of the health care team in FQHCs has been steadily growing. However, pharmacist led management of complex medication regimens such as the management of U-500 insulin remains underutilized.

Methods: At this site, primary care providers (PCP) refer patients with diabetes to be managed by pharmacists per protocol. A pharmacist may adjust insulin doses as appropriate and may request a change in insulin types with PCP approval. Patients who require a total daily insulin dose of >200 units are indicated for initiation of U-500 insulin. This study will be a retrospective chart review of the patients on U-500 insulin managed by a pharmacist. Results will be determined from the point of the initiation of pharmacist management in patients on U-500 until the point of termination of pharmacist management (due to attaining glycemic control or if patient is lost to follow-up). Current pharmacist management of patients on U-500 will be included until the point of the completion

of data collection which will be treated as the point of termination. Inclusion criteria are as follows: age > 18 years, last documented hemoglobin A1c before or a hemoglobin A1c measured within one-month of initiation of pharmacist managed care, at least one recorded follow-up encounter with a pharmacist, and a least one documented hemoglobin A1c no sooner than 3 months after initiation of pharmacist managed care. Baseline characteristics, hemoglobin A1c, patient weights and number of insulin adjustments made by the pharmacist during the study period will be evaluated with descriptive statistics. Safety data to be analyzed includes reported episodes of hypoglycemia.

Results: Evaluation in progress.

Implications/Conclusions: To be determined following data collection.

112-Working with Diabetes: An Evaluation of the Factors Associated with Enrollment in an Employer-Sponsored Diabetes Management Program. Huon C, Murhammer P, Hamper J, Albertsons Companies, Patel P, Abu-Baker A, Texas A&M University. Email: cayla.huon@albertsons.com.

Objective: The objective of this study is to assess the motivating factors associated with participation in a nationwide employer sponsored diabetes management program led by pharmacists. In addition to motivating factors, patients' perceived value regarding topic discussions and pharmacist knowledge will also be assessed. Background: The American Diabetes Association (ADA) currently recommends that all patients with diabetes participate in diabetes self-management education and support (DSMES) in order to assist with the skills and knowledge necessary for optimal self-care. With this recommendation, it is becoming more common that employers are sponsoring diabetes management programs for their employees. Many of these programs are being conducted by pharmacists who account for the third largest profession that holds the certified diabetes educator (CDE) title. The success of DSMES programs have been shown through clinical and economic outcomes yet the number of patients enrolled in an ADA accredited DSMES program is still less than 5%. It is the intention of this study to use data collected to drive enrollment and participation in the future.

Methods: A survey targeting 575 participants currently enrolled in a nationwide employer-based associate diabetes management program (ADMP) has been developed. The survey consists of 15 questions regarding motivating factors for enrollment, what patients find valuable in the program, and patient demographics. The survey will be sent out to each Patient Care Services Manager across 13 divisions to provide to their respective ADMP participants. The survey will be given to participants who have an appointment scheduled between October 2019 and January 2020. Participants who have multiple appointments scheduled during that time frame will only be given the survey one time. Inclusion criteria for the program include current employment with the Company or spouse/dependent relationship of a current employee, diagnosed type 1 or type 2 diabetes, and enrollment in the company's insurance plan. Any participant less than 18 years of age or participants who do not receive a follow up appointment during the given time frame have been excluded from this study. The evaluation of the results will be done using data collected from the survey and then submitted to a statistician for expert analysis.

Results: Research in Progress.

Conclusion: Results of this study will help to identify motivating factors and insight that can be used to increase enrollment in DSMES programs across the nation. Programs can be tailored to topics that patients find valuable and help them reach their target blood glucose, hemoglobin A1C, and other health goals.

113-Impact of the Louisiana Medicaid Uniform Preferred Drug List on Discharge Insulin Prescriptions at an Academic Medical Center. Hymel M, Parham A, Welch H, University of Louisiana at Monroe. Email: hymelmd@warhawks.ulm.edu.

Objective: This study seeks to determine whether state adoption of a uniform Medicaid preferred drug list (PDL) increased prescribing of formulary insulins at hospital discharge. In May 2019, Louisiana adopted a common preferred drug list among its five Medicaid managed care plans in an effort to simplify medication prescribing. By decreasing variation among local preferred drug lists, this statewide change may reduce barriers experienced by patients in need of high-cost medications such as insulin, especially during transitions of care where non-formulary rejections are often difficult to resolve.

Methods: This retrospective cohort study will compare data from 6 months before and 6 months after the adoption of the uniform PDL in Louisiana. Adult patients covered under a Louisiana Medicaid managed care plan who were discharged from our institution with any insulin prescription between November 1, 2018 and October 31, 2019 will be eligible for inclusion. Data collected from the medical record will include baseline demographics, insulin regimen, admission diagnoses, baseline and post-hospitalization hemoglobin A1c values, and 30-day hospital readmission rate. Percentages of patients prescribed formulary insulins will be compared before and after adoption of the uniform PDL. Data will also be analyzed to determine whether prescribing of preferred insulins affected hemoglobin A1c levels and 30-day readmission rate.

Results: Research in progress. This study has been approved by the Institutional Review Board, and results will be presented at the APhA Annual Meeting.

Implications: This study will shed light on whether state adoption of a Medicaid common preferred drug list affects provision of affordable insulin at discharge. Results may guide future quality improvement efforts to encourage prescribing in compliance with local formularies. If the uniform preferred drug list positively impacted patient outcomes, this could encourage future initiatives to

reduce variation among local formularies.

114-Renal, Cardiovascular (CV), and Safety Outcomes of Canagliflozin (CANA) According to Baseline Kidney Function: A CREDENCE Secondary Analysis. Jardine M, UNSW Sydney, Mahaffey K, Stanford University, Agarwal R, Indiana University. Email: mjardine@georgeinstitute.org.au.

Objective: CANA is approved in people with type 2 diabetes and eGFR ≥45mL/min/1.73m2. We assessed its efficacy and safety according to eGFR strata including the 30-<45mL/min/1.73m2 stratum.

Methods: The CREDENCE study enrolled 4401 participants with eGFR 30-<90mL/min/1.73m2 and urinary albumin:creatinine ratio >300-5000mg/g, randomizing them within eGFR-based strata to CANA 100mg daily or matching placebo. Primary and prespecified secondary composites and safety outcomes were analyzed using Cox proportional hazards regression within each screening eGFR stratum 30-<45, 45-<60 and 60-<90mL/min/1.73m2.

Results: At screening, 1313 (29.8%), 1279 (29.1%), and 1809 (41.1%) participants had an eGFR 30-<45, 45-<60 and 60-<90ml/min/1.73m2. Overall, CANA reduced the primary outcome, the renal composite of ESKD, sustained doubling serum creatinine (SCr) or renal death, a range of CV outcomes and serious adverse events with no impact on fractures or amputations. There was no evidence the impact of CANA differed between eGFR subgroups (all P-interaction >0.11). The benefits of CANA were individually significant in people with a screening eGFR 30-<45ml/min/1.73m2 for the primary composite, renal composite and composite of CV death or hospitalization for heart failure (95%CI upper limit <1.00).

Implications/Conclusion: CANA safely reduces the risk of renal and CV events in people with type 2 diabetes and substantial albuminuria, and these benefits are preserved across a spectrum of eGFR 30-<90ml/min/1.73m2, including eGFR 30-<45/min/1.73m2.

115-Continuous Glucose Monitoring in an Internal Medicine Residency Clinic for Patients on Insulin or Secretagogues. Kim J, Cone Health Internal Medicine Center, Fasina I, University of North Carolina, Greensboro Area Health Education Center. Email: jen.kim@conehealth.com.

Objective: Continuous blood glucose monitoring in patients with type 2 diabetes on insulin or secretagogues Background/Objective: The purpose of this study is to analyze hypoglycemic events in patients with type 2 diabetes who are taking insulin or secretagogues and have a low or normal A1c. Continuous glucose monitoring (CGM) increases the precision of measuring blood glucose (BG) levels and can be useful for optimizing diabetes therapy. Studies have demonstrated the utility of CGM in patients type 1 diabetes, but research evaluating other populations who may benefit from CGM is lacking. Insulin and secretagogues are known to increase risk of hypoglycemia.

Methods: This is a descriptive study designated as quality improvement by the Institutional Review Board. It was conducted at an internal medicine residency primary care clinic serving adult patients regardless of financial status, of which approximately 50% are indigent. Patients were included if they were ≥ 18 years old, diagnosed with type 2 diabetes, with a current treatment regimen including insulin, secretagogues, or both. Additionally, patients < 65 years old were included if their A1c was < 7%; those > 65 years old were included if their A1c was < 8.5%. Patients with home CGM, who completed a clinic CGM within the past year and did not have hypoglycemia, or patients who declined or were unable to be reached were excluded. The primary outcome is pre-post comparison (week 1 vs week 2) of the mean percentage of CGM readings < 70 mg/dL. Secondary outcomes are pre-post comparisons of various BG results, and interventions performed. Data was collected via chart review and analyzed using descriptive statistics. Preliminary

Results: Ninety patients were identified as meeting inclusion criteria, of which 21 patients have been enrolled thus far, with a mean age of 67 years, 80% female, 80% African American, and a mean baseline A1c of 6.9%. Fourteen (67%) patients had > 1% of BG readings < 70 mg/dL, and 10 (47.6%) had > 4% of readings < 70 mg/dL. Seven (35%) patients were found to have BG < 54 mg/dL for > 1% of the time, and 4 (20%) had BG < 54 mg/dL for > 4% of the time. So far, 13 patients have 2 weeks of CGM data available; the mean BG was 138.4 mg/dL the first week and 142.7 mg/dL the second week. The mean time within range week 1 vs week 2 was 71.7% and 75.5%, respectively. The mean amount of BG < 70 mg/dL was 8.1% the first week, and 4.5% the second week. The mean amount of BG < 54 mg/dL was 2.8% the first week and 1.3% the second week. Insulin or sulfonylureas were discontinued in 8 patients, and doses were reduced in 9 patients.

Conclusions/Implications: CGM can be a powerful tool for targeted patient interventions to improve safety and optimize therapy for patients with diabetes. Providers can consider CGM for patients who are taking insulin or secretagogues, which may help with deprescribing efforts.

116-Statin Therapy Initiation in Type 2 Diabetes Mellitus Patients. Laushaw M, Howard University. Email: morgan.laushaw@bison.howard.edu.

Objective: The objective of this chart review was to assess whether type 2 diabetes mellitus (T2DM) patients with atherosclerotic cardiovascular disease (ASCVD) risk factors are prescribed statin therapy. According to the American Heart Association (AHA) cardiovascular disease (CVD) is the leading cause of mortality and morbidity in T2DM patients, with diabetes having a 2 to 4 fold

increased risk over those without diabetes. CVD is characterized as stroke, heart failure, coronary artery disease, angina or myocardial infarction. The assessment tool that estimates the 10 year risk until the first cardiovascular event is the atherosclerotic cardiovascular disease (ASCVD) risk estimator but, in order to utilize this there are certain ASCVD risk factors that must be present that can lead to CVD. These risk factors are DM, hypertension (HTN), smoking, obesity, albuminuria, and a family history of ASCVD. The American College of Cardiology (ACC)/ American diabetes Association (ADA) recommends the use of a high intensity statin therapy to reduce the risk of ASCVD in people aged 40 to 75 with T2DM and those aged < 40 with ASCVD risk factors should receive moderate intensity statin. In Brugts et. al, they conducted a meta analysis studying statin therapy in patients without CVD, but with ASCVD risk factors. They found that treatment with statins reduced the risk of all cause mortality, major coronary events and major cerebrovascular events.

Methods: We conducted a chart review of T2DM patients referred to the clinical pharmacist. The electronic medical records (EMR) of these patients were reviewed from January to September of 2019. The inclusion criteria is patients seen by the pharmacist, having T2DM, age < 40 with ASCVD risk factors and those aged 40-75. The exclusion criteria included pregnant and age < 40 without ASCVD risk factors. The primary outcome was the prescription of a statin. The secondary outcomes are the most prominent risk factors and statin prescribed. Analysis of this data was prepared using a frequency table.

Results: There were 26 patient records that were examined excluding one because of pregnancy, which leaves a total of 25 patients reviewed. The mean age was 53 (range 27 to 75). The patients were mostly women (68%) with Hispanic/Latino ethnicity (96%). The primary endpoint of prescribing statin therapy was seen in 60% of the patients. The secondary endpoints of the most prominent risk factors were HTN (52%) with atorvastatin and simvastatin (24%, 24%) being the statins prescribed the most.

Conclusion: In T2DM patients referred to the clinical pharmacist with ASCVD risk factors, over half of the patients were on statin therapy. This is important because statin therapy has beneficial outcomes related to CVD. Some limitations in this study are that the patients ASCVD risk estimation was not used because the focus was on the risk factors. Also, obesity, albuminuria nor the number of provider visits was assessed. Although, there were more patients on statins there were still many who were not and this may be due to those patients being lost to follow up.

117-Prescriptions for Fresh Fruits and Vegetables: Just What the Doctor Ordered? Martinez J, Community Health & Wellness Partners. Email: jason.martinez@chwplc.org.

Objective: Diabetes affects over 30 million Americans and is one of the most expensive diseases to treat. The American Diabetes Association recommends all patients with diabetes receive ongoing personalized education on how to best self-manage diabetes along with lifestyle education, but only 5-10% of patients receive this education. Research shows individuals who live in food-insecure households are at high risk of chronic disease, such as diabetes. Wholesome Rx, a prescription for fresh fruits and vegetables program, was implemented in a rural Federally Qualified Health Center from February through November 2019. Objectives included increasing nutrition education and creating a supportive learning environment to self-manage diabetes through behavior changes, increasing access to fresh fruits and vegetables, and utilizing the electronic medical record to capture program data. Supported by an Ohio Department of Health grant and Wholesome Wave, 129 patients with prediabetes, Type 1 or Type 2 diabetes were enrolled in the program which combined education with vouchers to be used for fresh fruits and vegetables at local grocers and farmers markets.

Methods: Patients were selected for program enrollment by their primary care provider who wrote a prescription for the patient to increase intake of fresh fruits and vegetables. Patients were then followed closely by a clinical pharmacist, registered dietitian, and behavioral health provider. Patients completed a pre-and post-enrollment questionnaire which gathered demographic information and assessed food insecurity and nutrition knowledge. Metrics tracked throughout the program included hemoglobin A1C, blood pressure, weight, and body mass index. Entry data showed a wide range of A1Cs and varying knowledge about how food impacts blood sugars. Patients returned every 6-8 weeks to receive further education and vouchers while maintaining regular follow up with their primary care provider. Class topics included designing a healthy plate, incorporating exercise into their regimen, and creating positive behavioral changes. Voucher amount was based on household size.

Results: Patients consistently provided feedback of increased capacity to obtain fresh fruits and vegetables not only improved their own diet but also that of their household. Preliminary results show a 0.7% A1C difference between those who have attended classes and those who haven't. Analyzing the results of patients above A1C goal at program entry shows a 1.2% A1C difference for those who have attended classes. Data at the time of writing shows focused diabetes education in a supportive group format reduces patients' blood sugars at levels equivalent to many commercially available diabetes medications. Multiple patients have lost more than 30 pounds and one individual has had a greater than 6% A1C reduction. He credits the program for being the catalyst to taking diabetes seriously and improving his adherence to his medications.

Conclusion: Patients have been able to reduce the dose of their medication or eliminate some medications which they report will allow them to continue to purchase fruits and vegetables once the program ends due to cost savings. Pharmacists should consider incorporating focused lifestyle education as another component of a diabetes treatment plan, as our results show it can also improve medication adherence leading to better outcomes.

118-Measuring the Impact of a Three-Year Interprofessional Collaboration of Pharmacy Services on Diabetes Care in a Primary Care Setting. Mickool D, Cheng H, Richardson M, University of New England. Email: dmickool@une.edu.

Objective: The primary objective was to evaluate the effect of clinical pharmacy services in an interprofessional setting to improve A1c outcomes in patients with type 2 diabetes (T2DM) in a primary care practice at the Family Medicine Institute (FMI) at Maine General Hospital.

Methods: A faculty pharmacist and students collaborated with FMI physicians and residents to provide services in a primary care clinic and during home visits to patients with T2DM beginning in 2017. The pharmacy team offered medication reconciliation, medication optimization, and renal dosing/staging using guidelines from Kidney Disease Improving Global Outcomes (KDIGO) and American Association of Clinical Endocrinologists (AACE). The goal of the interprofessional diabetes team was to achieve the Medicare/Medicaid goal of maintaining less than 65% of patients with an A1c between 7 and 8. During outpatient visits in the FMI and home visits, medications, blood pressures, A1c values and creatinine clearance were documented and analyzed, and the pharmacy team made recommendations to the physicians and changes were documented in patients' charts. A1c aggregate data were analyzed from 2017 through 2019, and compared with data from 2014-2016.

Results: Between January 2017 and August 2019, 509 patients with T2DM were seen by the interprofessional diabetes team during office and/or home visits. In 2017, prior to the addition of a pharmacist to the team, 68% of FMI patients had an A1c between 7 and 8; during the subsequent two years, the proportion was reduced to 67% in 2018 and further reduced to 62.2% in 2019, achieving the goal of fewer than 65%.

Implications/Conclusion: The pharmacy team, using expert guidelines to intensify and adjust medications, provided consultation to FMI physicians, resulting in objectively improved effectiveness of diabetic care. The addition of a pharmacist on the team allowed for evidence-based practice using established guidelines, yielding favorable results to reduce A1c over a three year period. Currently, the pharmacy team is further quantifying the impact of renally dosing diabetic medications on the reduction of A1c for FMI patients.

119-Assessment of Metformin-Related Vitamin B12 Deficiency Monitoring in a Federally-Qualified Health Center. Mullins H, Adkisson A, Divine H, McIntosh T, Dicks M, Kebodeaux C, University of Kentucky, Shadler A, Kentucky Children's Hospital. Email: Hayley.mullins@uky.edu.

Objective: The primary objective of this study is to assess frequency of vitamin B12 monitoring in patients with type 2 diabetes taking metformin, with peripheral neuropathy and/or anemia, at a Federally Qualified Health Center. Several studies have shown an association with long-term use of metformin and vitamin B12 deficiency in patients with type 2 diabetes. In 2017, the American Diabetes Association (ADA) recommended periodic measurement of vitamin B12 levels for patients on metformin, particularly if they are diagnosed with peripheral neuropathy or anemia. Secondary objectives include analyzing patient demographics that contributed to performing metformin-related vitamin B12 monitoring.

Methods: This study is a retrospective chart review to analyze the frequency of vitamin B12 monitoring in patients with type 2 diabetes on metformin and a diagnosis of peripheral neuropathy and/or anemia. Patients will be ≥18 years of age, taking metformin for at least 12 months, and have a diagnosis of neuropathy, anemia, or being treated with pharmacotherapy for these conditions. The study will review vitamin B12 monitoring over a period of 24 months, October 2017 through October 2019.

Results: Research in progress.

Conclusions: This study will identify opportunities for improvement in this health system for appropriate monitoring of metformin-related vitamin B12 deficiencies. According to the results of this study, future studies can address potential patient demographics that contribute to routine metformin-related vitamin B12 monitoring.

120-Pharmacist Collaboration To Incorporate Continuous Glucose Monitoring into A Family Medicine Clinic. Nguyen T, University of Minnesota, Philbrick A, Harris I, Bethesda Family Medicine Clinic, Fong S, University of Minnesota. Email: nguyenth@umn.edu.

Objective: With the introduction of continuous glucose monitoring (CGM) in 1999, diabetes technology has made tremendous strides and with that, a new approach to diabetes management. Various clinical studies have indicated CGM to reduce HbA1c, hypoglycemia events and variability in blood glucose. Additionally, reports have shown CGM to reduce total healthcare cost and hospital admission. However, there has been minimal integration of CGM into patients' diabetes management. The goal of this quality improvement project was to increase the percentage of patients using CGM by April 1st, 2020.

Methods: This project will be conducted at a family medicine residency clinic. In October 2019, providers will complete an electronic pre-survey to determine baseline confidence in utilizing CGM. Additionally, baseline percentage of patients on CGM will be obtained by generating a list from the electronic medical record. A detailed outline of the process of CGM coverage based on a patient's insurance will be written and include how to identify appropriate candidates for CGM and how to interpret data obtained through CGM to manage patients with diabetes. In November 2019, the pharmacy resident will educate providers about the CGM outline during a scheduled education session. Providers will complete a post CGM education electronic survey in March 2020 to measure the percent change of provider confidence and to identify prescriber-perceived barriers of incorporating CGM into patients' diabetes management. Providers can identify barriers from a generated list in the post survey and document any additional barriers not on the list. Finally, the percent of patients on CGM will be obtained after education to measure the percent change of patients utilizing CGM.

Preliminary Results: In progress.

Implications/Conclusions: In progress.

121-The PHARMer's Market: Reducing A1c in Type II Diabetes Patients Through Active Dietary Education and Lifestyle Modifications. Nkwocha C, Brown B, Guo J, University of Cincinnati, Bailey L, Curington R, Espel M, Saint Vincent de Paul Charitable Pharmacy. Email: chinyereliliann@gmail.com.

Objective: Determine the impact of the Pharmer's Market Program, a pharmacist directed diabetes counseling initiative with an emphasis on dietary lifestyle modifications, on hemoglobin A1c (A1c). Background: Diabetes is a chronic, progressive condition associated with a myriad of health-related complications. Medication therapy and lifestyle modifications are critical components of disease management. While medication therapy is useful in preventing and delaying disease progression, appropriate lifestyle modifications are a more cost-effective measure for mediating diabetes. When substantiated, lifestyle modifications can decrease medication cost, pill burden and side effects caused by drug therapy.

Methods: A retrospective chart review identified 50 patients who completed the Pharmer's Market Program. These patients had an initial A1c ≥ 9% and a documented diagnosis of type II diabetes. Their initial A1c was compared to a final A1c collected 3 months later. Changes in A1c were assessed as the primary endpoint and were analyzed using a one-way paired t test. Secondary end-points of weight, body mass index, blood pressure, eating habits, food security, and medication adherence were also analyzed. In addition, A1c values between the intervention group (enrolled in Pharmer's Market) and comparison group (not enrolled) were also assessed. Final

Results: Report in progress.

Conclusions/Implications: Report in progress.

122-Similar Efficacy and Gastrointestinal Tolerability Versus Exposure for Oral and Subcutaneous Semaglutide. Navarria A, Hertz C, Ingwersen S, Novo Nordisk. Email: amnv@novonordisk.com.

Objective: Using populations from SUSTAIN and PIONEER trials, the present analyses aim to investigate if the oral route of administration changes the efficacy and gastrointestinal tolerability of semaglutide compared to subcutaneous (s.c.) administration. Semaglutide is a glucagon-like peptide-1 analog formulated as both a once-weekly s.c. injection, and a once-daily oral tablet, for the treatment of type 2 diabetes. The s.c. and oral formulations have been evaluated across several trials in the SUSTAIN and PIONEER programs, respectively. Lower bioavailability associated with oral administration results in more variable plasma concentrations of semaglutide compared to s.c. administration.

Methods: Population pharmacokinetic (PK) and exposure–response analyses were based on average semaglutide concentrations at steady-state. Response data from four trials (SUSTAIN 1, 2, 3, and SUSTAIN-Japan) of once-weekly s.c. semaglutide 0.5 and 1.0 mg over 30 weeks (n=1552) were compared with data from six trials (PIONEER 1, 2, 3, 5, 8, and 9) of once-daily oral semaglutide 3, 7, and/or 14 mg over 26 weeks (n=3003). Propensity score matching was used to balance the differences between the SUSTAIN and PIONEER populations in terms of baseline HbA1c, trial population, diabetes duration, race, ethnicity and sex. Using graphical and model-based techniques, exposure–response relationships were investigated for changes from baseline in HbA1c and body weight, and the proportion of subjects reporting gastrointestinal adverse events of nausea or vomiting at any time during treatment.

Results: The SUSTAIN and PIONEER populations were fairly similar, with 55% and 58% male subjects, 65% and 78% aged 18−64 years, mean baseline HbA1c of 8.1% and 8.1%, and mean body weight of 88.2 kg and 86.3 kg, respectively. Population PK analysis indicated dose proportional PK, where body weight was the main covariate for exposure for both s.c. and oral semaglutide. Exposure–response analyses showed greater HbA1c and weight reductions with increasing semaglutide exposure. The main covariate for glycemic effect was baseline HbA1c (larger HbA1c change from baseline at higher baseline HbA1c). The proportion of subjects reporting nausea or vomiting during s.c and oral semaglutide treatment increased with increasing semaglutide exposure. The exposure range following oral semaglutide was wider than for s.c. dosing, but with a considerable overlap between oral semaglutide 7 and 14 mg and s.c. semaglutide 0.5 and 1.0 mg, indicating similar exposure levels across formulations. Exposure–response relationships for efficacy and safety were consistent across the SUSTAIN and PIONEER datasets and even more consistent, with overlapping 95% confidence intervals, when propensity matching was used.

Implications/conclusions: Similar exposure–response relationships were observed for efficacy and tolerability of semaglutide, regardless of the route of administration, indicating that greater variability in plasma concentration levels for oral semaglutide do not impact response. These data were previously presented at the 55th Annual Meeting of the European Association for the Study of Diabetes in September 2019 (Abstract # 777).

123-Clinically-Integrated Community Pharmacy Network Approach to Delivering Minimum Enhanced Services for Patients with Diabetes. Panthapattu M, Fitzgibbon D, Shah D, Jacobs D, University at Buffalo, Lindenau R, Middleport Family Health Center. Email: merinpan@buffalo.edu.

Background/Objectives: The primary objective of this study is to understand the readiness of pharmacists within the Community Pharmacy Enhanced Services Network (CPESN) New York (NY) to deliver minimum enhanced services (MES) and diabetes self-

management education (DSME). MES as defined by CPESN NY include services such as face-to-face access, medication reconciliation, and comprehensive medication reviews (CMR). DSME as defined by the american diabetes association is the ongoing process of facilitating the knowledge, skill and ability necessary for diabetes self-care. the secondary objective is to assess barriers facing community pharmacy (cp) in providing mes and dsme services. we are focusing on dsme services since cpesn ny is exploring the establishment of a bidirectional referral program at interested pharmacies. Given the shift in U.S. healthcare from a fee-for service model to a value-based model, care services offered by community pharmacists are an excellent platform to provide a comprehensive approach to chronic disease state management.

Methods: This study was a cross-sectional, electronic survey containing multiple choice, 5-point Likert scale, and fill in style questions. This survey was designed by a panel consisting of content experts, community pharmacists, and program facilitators at the new york state department of health. The electronic survey was pilot tested by a panel of community pharmacists for content and clarity. This study was approved by the university at buffalo irb. The survey was distributed in november 2019 via email to 145 pharmacies within CPESN NY. The survey is broken down into 8 sections containing: 1) demographics; 2) store logistics 3) clinical services; 4) interprofessional collaboration; 5) community pharmacist's access to clinical information; 6) current and anticipated DSME service offerings; 7) pharmacy readiness and resource allocation; and 8) perceived barriers towards the implementation of MES and DSME. Descriptive statistics were utilized to evaluate survey responses. Survey outreach is ongoing with additional planned data collection in january 2020.

Preliminary results: To date, a total of 46 (32%) completed responses have been recorded. Respondent demographics include: male gender (n=36, 78%), age 40+ (n=30, 65%), 21+ years' experience (n=18, 39%), and store owner (n=33, 72%). The pharmacy settings include: Rural (22%), Suburban (22%), and Urban (54%). Pharmacies report spending >10% of time on MES (83%). The top MES offered at cpesn ny pharmacies include: face-to-face access (98%), clinical medication synchronization (93%), and cmr's (93%). the top dsme services offered include: evaluating patients for standard of care (87%), educating patients on blood glucose monitoring (87%), and monitoring adherence (83%). The top barriers facing pharmacies implementing MES and DSME services identified include: lack of collaboration with other healthcare professionals, proper training of pharmacy personnel, and insufficient marketing strategies. The top facilitators leading to the successful delivery of MES include: adequate staffing levels for execution of MES, proper training for pharmacy personnel, and technology to execute workflow on MES.

Implications/conclusions: community pharmacists are providing mes and dsme that can impact outcomes for patients with diabetes. obtaining this baseline assessment will establish a foundation for community pharmacist readiness towards the implementation of MES and DSME.

124-Is There Clinical Evidence for the Safety and Efficacy of Mobile Health Applications? Pathak A, University of Southern California. Email: avantikp@usc.edu.

Objective: To examine the evidence of safety and efficacy of mobile medical applications currently on the market to manage diabetes. Background: Diabetes is a common condition affecting 30.3 million Americans. It is also one of the main therapeutic areas occupied by mobile health applications (mHealth apps), representing 16% of the approximately 325,000 mHealth apps available on the Google Play Store and Apple App Store. The variety of mHealth apps designed for diabetes management address documentation, data analysis, healthy recipes, and therapeutic support. These applications differ in how the United States Food and Drug Administration (FDA) classifies and regulates them. Over the past eight years, the FDA has progressively deregulated these products. Thus, while a few are considered high-risk or moderate-risk and are regulated by the FDA, the majority are released to market without regulatory oversight. Hence, it is unclear how reliable mHealth apps on the market are in demonstrating safety and efficacy.

Methods: To understand the current regulatory landscape of mHealth apps for diabetes, a literature survey was conducted for the terms "diabetes mobile applications" with "safety" and "efficacy" in the Pubmed database from 2013 to present. Subsequently, ten key terms were searched in the Apple store for diabetes management applications and the first ten results were included in the analysis. Definitions of various mobile medical applications listed in FDA guidance documents were used to classify these applications. Additionally, information from FDA databases was examined to determine whether selected mobile health applications were being regulated or had recalls. Applications of interest were searched on clinicaltrials.gov to see if they were included in ongoing or completed clinical trials. For those listed, trial designs were examined to see if they included outcomes related to efficacy and safety.

Final Results: A total of seventy-one mHealth apps for diabetes management were identified. Of these, nine were used to transform a mobile platform into a regulated medical device. Sixteen applications were regulated and spanned a diverse range of functions. Eleven out of sixteen had data from clinical trials demonstrating efficacy but only four had data demonstrating both efficacy and safety. Two of the regulated applications were subject to product recalls due to programming errors resulting in incorrect insulin dose recommendations. These two applications had clinical trials evaluating efficacy but not safety. The companies involved in these recalls noted that the incorrect insulin calculation could cause either a low-or high-impact hypoglycemic event. Of the remaining applications, a majority met the description of applications that have been excluded from the definition of mobile medical applications and are no longer subject to regulatory oversight.

Conclusion: Because most of the regulated applications in the diabetes marketplace have little to no clinical trial data to support their safety and efficacy, they potentially pose risks for patients as evidenced by recent safety related recalls. It is important that healthcare

professionals and consumers become aware of these risks and the lack of clinical evidence for safety and efficacy in mHealth apps for diabetes management.

125-Transitioning Patients with Type 2 Diabetes from Prandial Insulin to Glucagon-Like Peptide 1 Agonists. Prudencio J, Kim M, University of Hawaii-Hilo. Email: jarredp@hawaii.edu.

Objective: The objective of this study is to describe the characteristics of patients with type 2 diabetes who may benefit from transitioning from prandial insulin to a glucagon-like peptide 1 (GLP-1) agonist. Compared to prandial insulin regimens which may include up to 3 injections per day, GLP-1 agonists have the benefit of once daily or weekly injections, minimal risk of hypoglycemia, and weight loss. In 2019, the American Diabetes Association (ADA) provided a new recommendation with regard to injectable therapy, that patients be prescribed a GLP-1 agonist first, then therapy should be intensified to prandial insulin if patients do not have adequate glycemic control. Because this is a new recommendation, many patients have already been prescribed prandial insulin, who may have benefitted from a GLP-1 agonist instead. It is unclear which patients could be successfully transitioned from prandial insulin therapy to a GLP-1, and the ADA does not have a recommendation on this situation. This study describes patients managed by two clinical pharmacists in a rural family medicine clinic who have attempted a transition from prandial insulin to GLP-1 agonists. Primary outcomes to assess include dose of prandial insulin, change in hemoglobin A1c, and change in weight.

Methods: Data was retrospectively gathered from the electronic medical record for all patients who were managed by the clinical pharmacists. Patients who had previously been prescribed prandial insulin and were transitioned to a GLP-1 agonist were identified. Patients were excluded if they did not have an updated A1c at least 3 months after starting the GLP-1 agonist. Data gathered included hemoglobin A1c's before and after the transition, prandial insulin and GLP-1 doses, reasons for considering the transition, weight, additional anti-diabetes medications, and demographic data. Descriptive analysis was used in this study to summarize findings from these patients.

Results: A total of 7 patients met inclusion criteria. All patients were initially prescribed either insulin aspart or insulin lispro. The average dose of rapid-acting insulin prior to transition was 37 units/day, with a lowest of 15 units/day and highest of 60 units/day. GLP-1's used included semaglutide, dulaglutide, and liraglutide. Pre-transition average A1c was 8.51% and this decreased to 7.19% after transition. The most common initial reason for the transition was convenience (57%), followed by hypoglycemia (29%) and weight concerns (14%). Patients had an average weight loss of 14 lbs.

Implications/Conclusion: This study highlights characteristics of 7 patients with type 2 diabetes who were successfully transitioned from prandial insulin to a GLP-1 agonist. Though the study sample is small, there are currently no published studies describing characteristics of patients who may be successfully transitioned from prandial insulin to a GLP-1 agonist. These findings have highlighted that patients with prandial insulin regimens of up to 60 units per day may potentially benefit from transitioning to a GLP-1 agonist. Further studies could attempt to describe this on a larger scale. Patient-specific medicine should always be practiced, but clinicians may utilize this information as considerations in other practice sites managing type 2 patients.

126-A Longitudinal Mixed Methods Study of Changes in Medication Adherence Among African Americans with Type II Diabetes. Rao D, Maurer M, Meyer J, Zhang J, Shiyanbola O, University of Wisconsin-Madison. Email: dmrao@wisc.edu.

Objective: (1) To evaluate changes in medication adherence over time and assess the role of psychosocial and interpersonal constructs on adherence changes. (2) To explore the barriers and facilitators to African American (AA) patients' medication adherence changes. Background: AAs are twice as likely to be diagnosed with type 2 diabetes than non-Hispanic whites and five times more likely to develop diabetes complications. Studies show that AAs have 25% lower adherence to diabetes medications than whites. Medication adherence is a dynamic process that changes as the social and environmental context of individuals changes and must be studied longitudinally.

Methods: An explanatory sequential mixed methods design was used for a survey at baseline and follow-up at 6 months (Objective 1), followed by an interview (Objective 2). We applied the Integrated Theory of Health Behavior Change, theorizing that patients are adherent if they embrace beliefs consistent with their adherence behavior, develop self-regulation abilities to change their behavior (psychosocial), and experience social support encouraging their adherence (interpersonal). The questionnaire included self-reported valid/reliable measures of medication adherence (Adherence to Refills and Medication Scale-Diabetes), psychosocial constructs - illness and medication beliefs (Brief Illness Perception and Belief about Medicines Scales), self-efficacy (Self-efficacy for Appropriate Medication Use Scale), health literacy (Three Item Literacy Screener), and depressive symptoms (Patient Health Questionnaire-9), interpersonal constructs -social support (Medical Outcome Study Social Support Survey) and patient-provider communication (Patient-perceived Involvement in Care Scale). Socio-demographic and clinical factors included age, gender, number of medications and chronic illnesses, and perceived overall health. Convenience sampling was used to recruit English-speaking patients, ≥ 20 years old with type II diabetes who self-identify as AA/Black through two clinics. Surveys were mailed to eligible participants (n=287) with responders receiving the follow-up. Ten 60-minute semi-structured interviews were conducted with respondents of both surveys who had change in adherence. Descriptive, mean differential, and bivariate correlational analyses and inductive content analysis were conducted. Data integration merged quantitative and qualitative results as a joint display.

Results: Response rates for initial and follow-up survey were 27% and 62% respectively. Mean age was 52.6 years (SD=12.03). On average, participants took two oral medications and had two chronic illnesses. Forty (56%) participants were male, 21(30%) had high school education or less, and 21 (30%) had poor or fair self-reported health status. Adherence scores were significantly correlated with construct scores and age at baseline and follow-up. There was no significant change overtime in the average scores on all scales except health literacy. Qualitative data showed some patient barriers to adherence were side effects of medicines and pill burden. Adherence facilitators included high self-efficacy and taking medicines to avoid disease severity and complications.

Conclusion: Concern beliefs about medicines was a barrier and facilitator to adherence indicating necessity of addressing specific beliefs of AA patients towards diabetes medications. Self-efficacy was not a significant predictor of adherence overtime while social support and increased health literacy were adherence motivators. Psychosocial constructs and patient's environment are important to maintain adherence overtime indicating a need for comprehensive individualized interventions in medication adherence.

127-Primary Care Diabetes Program Incorporates Community Pharmacists To Improve Patient Outcomes. San Juan A, University of Arkansas for Medical Sciences. Email: asanjuan@uams.edu.

Objective: One regional division of a large community pharmacy chain has established a relationship with a large health system in which one community pharmacist is integrated into a primary care clinic to manage patients' uncontrolled diabetes. The pharmacist's role includes, but is not limited to, providing patient education, titrating insulin, assessing glucose control, identifying gaps in therapy, and assessing patient adherence to therapy and diet. Although improvement has been seen through this intervention (average decrease of 1.2% HbA1c), some patients are still not at goal and remain uncontrolled. Given the accessibility of community pharmacists, we hypothesize that a collaboration with community-based pharmacists and the clinic-based pharmacist may have a further positive impact on patient clinical outcomes. To date, there are limited studies on health systems utilizing community-based pharmacist interventions to improve chronic disease state management; however, none of the studies incorporate these interventions into the daily workflow of the community-based pharmacist. The primary objective of this project is to determine the impact of community pharmacy-based interventions using a primary care referral-based program on hemoglobin A1c.

Methods: This research will take place at one primary care clinic and 12 pharmacies within a 50 mile radius of the clinic. The clinic-based pharmacist will identify and enroll patients at the primary care site. Mutual, uncontrolled diabetic patients who have an HbA1c greater than 8% who also fill their prescriptions with a pharmacy within the 50 mile radius will be identified. After patients are identified, the clinic-based pharmacist will conduct an enrollment visit to develop a care plan entailing a comprehensive assessment of the patient's diet/exercise, glucose monitoring, and medication adherence. The clinic-based pharmacist then will submit the patient's care plan and HbA1c to the respective pharmacies' prescription software. After receiving a referral from the clinic, community-based pharmacists will contact the enrolled patients on a monthly basis either by phone or a face-to-face visit and complete a 5 to 10 minute intervention using the care plan to assess the patient's progress and address barriers to the patient's HbA1c control. The community-based pharmacists will document their findings, create a follow-up for the next intervention, and report the information back to the clinic. Intervention impact will be measured by performing clinic chart reviews prior to intervention as well as 3 and 6 months after the intervention to compare HbA1c of 1) patients participating in the community-based intervention program and 2) patients not participating in the community-based intervention program but still receiving pharmacy service in the clinic. Descriptive statistics and a paired t-test will be used for primary analysis.

Preliminary Results: Preliminary Results will be presented at APhA Annual Meeting and Exposition 2020.

Conclusions/Implications: Results from this study will help determine the impact of community pharmacy-based intervention in collaboration with primary care practice. These results will also contribute to a larger future study to compare these interventions to usual care.

128-Pharmacist-Driven Remote Diabetes Management Using Home Blood Glucose Telemonitoring and a Standardized Treatment Protocol. Smith A, McMinn K, Ward A, Pearson M, Mississippi State Department of Health Pharmacy, Woods J, University of Mississippi Medical Center. Email: eashtonsmith93@gmail.com

Objective: In 2016, Mississippi ranked first in the nation for overall diabetes prevalence. This chronic disease accounts for more than 1,000 deaths annually, with thousands more living with the complications of type 2 diabetes. Pharmacists are the most underutilized healthcare professionals despite doctoral-level clinical training and can have an overall positive impact on outcomes related to clinical disease management, patient self-management, and adherence in the management of variety of chronic diseases. The objective of this study is to determine if pharmacist driven medication management using home blood glucose telemonitoring is as safe and efficacious as traditional physician driven remote patient monitoring.

Methods: This study will be submitted to the Institutional Review Board for approval. This is a prospective pilot study in which patients with uncontrolled blood glucose (BG) identified by providers at the University of Mississippi Medical Center (UMMC) will be contacted and recruited for study enrollment. The following data will be collected: demographics, height, weight, medical history, current medications, and laboratory data including, but not limited to, blood pressure, estimated GFR, creatinine, proteinuria, and hemoglobin A1c. Patients will be mailed a telemonitoring kit including an iPad tablet equipped with a wireless glucometer that transmits measurements directly to the UMMC electronic health record to be monitored by the UMMC Center for Telehealth. Every month, diabetes medications will be adjusted according to an evidence-based treatment algorithm managed by the Center for

Telehealth pharmacist using a standardized physician-approved protocol. The patient will be prompted to check his or her BG twice daily. The average BG will be calculated for each 4 weeks and will be used by the pharmacist to make adjustments. To protect confidentiality, all information will be stored on an approved password protected database that only study personnel will have access to.

Preliminary/Final Results: N/A.

Conclusions/Implications: N/A.

130-Investigation of the Efficacy of Empagliflozin and Prescriber Adherence to Criteria for use. Swenson A, Medical University of South Carolina, Tampis P, Malcolm R, Worrall T, Ralph H. Johnson VA Medical Center. Email: swensona@musc.edu.

Objective: SGLT-2 inhibitors are used for the treatment of type 2 diabetes and prevention of cardiovascular events. These agents are typically used first line along with metformin for patients that have high cardiovascular risk. Criteria for use at the VA typically restricts the use of SGLT-2 inhibitors to patients with documented clinical ASCVD or those who have failed to reach goal HbA1c after using two anti-diabetic agents. The purpose of this project is the evaluate the efficacy of empagliflozin in the VA population, as well as assess prescriber's adherence to the criteria outlined by the VA for use of empagliflozin.

Methods: This retrospective chart-review quality assurance project will evaluate patients determined to be on empagliflozin 10-25 mg daily. This project gained approval from the Ralph H. Johnson VAMC's Institutional Review Board. Male and female patients were selected from a generated list of patients prescribed any dose of empagliflozin receiving care at the Goose Creek community-based outpatient clinic within the Ralph H. Johnson VAMC. Patients were excluded if they did not receive a baseline HbA1c at initiation or did not have any follow-up HbA1c's. The primary outcomes were HbA1c reduction at 3-month and 6-month follow-up post-initiation of empagliflozin and prescriber adherence to VA criteria for use. Follow-up HbA1c's were compared to baseline using the Wilcoxon signed rank test for non-parametric paired data. Presence of clinical ASCVD and concomitant anti-diabetic medication use were evaluated to determine the appropriateness of prescribing.

Results: 128 total patients prescribed empagliflozin 10-25 mg daily were identified via a generated report. Of the 128 patients, 33 were excluded based on the HbA1c criteria listed above and 95 total patients were included in the study. Efficacy of empagliflozin for HbA1c reduction and prescriber adherence to criteria for use were evaluated. Average HbA1c reduction from baseline at 3-month follow-up (n=83) was 1.59% (p-value = <0.00001) with 23% of patients reaching goal HbA1c of <7% per the ADA Standards of Care guidelines. Average HbA1c reduction from baseline at 6-month follow-up (n=51) was 1.17% (p-value = <0.00001) with 19% of patients reaching goal HbA1c of <7%. Of the 95 patients identified, 89 were appropriately prescribed empagliflozin according to the VA's criteria for use. Of note, patients included in the study were on an average of 2 concomitant anti-diabetic therapies. Additionally, 34 patients had documented clinical ASCVD.

Conclusion: Treatment of type 2 diabetes mellitus with an SGLT-2 inhibitor, specifically empagliflozin, showed a statistically significant decrease in HbA1c at 3-month and 6-month follow-up in the VA population. 93.7% of empagliflozin prescribed was appropriate according to the VA's criteria for use. Providers should continue to be educated on empagliflozin and its place in therapy.

131-Piloting a Diabetic Pharmacotherapy and Education Service in a Community Pharmacy. Thompson J, Veach S, Urmie J, Witry M, University of Iowa. Email: jess-thompson@uiowa.edu.

Objective: Piloting a Diabetic Pharmacotherapy and Education Service in a Community Pharmacy Thompson J, Veach S, Witry M, Urmie J, The University of Iowa College of Pharmacy, Jermeland B, Hy-Vee Pharmacy. E-mail: jess-thompson@uiowa.edu Objective: The primary goal of this study is to pilot and evaluate the feasibility of implementing a comprehensive diabetes chronic disease management service in a community pharmacy. A secondary objective is to determine whether the service has an impact on patient confidence in their disease state knowledge.

Methods: This study is a prospective, single group intervention. The setting of this study is in a grocery store-based community pharmacy in the Midwestern U.S. This service includes a single one-on-one consultation, followed by a single telephone follow-up 2-4 weeks later. Individual appointments will include review of patient medications for appropriateness based on 2019 ADA guidelines, and education on diet using Carb Counting and Meal Planning booklets. Identified drug therapy problems will be recorded and communicated to the patient and their primary care physician. Additionally, the patient will be interviewed to assess individual adherence with the modified Drug Adherence Work-up tool (mDRAW). Participants will be included in this pilot if they are part of a value-based pharmacy program with a large private insurer with confirmed diagnosis of Diabetes Mellitus type 2, age 18 or over, and assigned to the primary pharmacy site for the month of October 2019. Exclusion criteria include patients who are non-english speaking, are currently admitted to an inpatient or skilled care facility, and patients who have significant cognitive deficits (advanced Alzheimer's disease, Schizophrenia, etc.). Feasibility of the service will be measured using time spent per patient, cost of providing service (labor cost) per patient, percentage of patients opting-in to the service, and percentage of therapy recommendations accepted by providers. A copy of the 16-question Diabetes Self-Management Questionnaire (DSMQ) will be sent to patients prior to their individual appointment, collected at the appointment, and collected again during their telephonic follow-up call. Change in confidence will be assessed using paired t-tests.

Results: Study in progress.

Conclusion: The results of this study will give insight into the feasibility of implementing a service to provide drug therapy assessments, medication interventions, and simple dietary education to diabetic patients by community pharmacists.

132-Inclusion of Diabetic Populations in Clinical Trials Conducted in Los Angeles County 2002 to 2019. Uhm S, Pire-Smerkanich N, Church T, Pacifici E, University of Southern California. Email: sunyounu@usc.edu.

Objective: The inclusion of diverse clinical trial participants can lead to more effective and specialized treatment for individuals with conditions, such as diabetes, where race and ethnicity play a role in its diagnosis and treatment. According to NIH, racial backgrounds are defined as American Indian/Alaska Native, Asian, Black/African American, Native Hawaiian/Other Pacific Islander, and White. Additionally, NIH-defined ethnic backgrounds as Hispanic/Latino and Not Hispanic/Latino.

Methods: To assess diversity inclusion within clinical trials held in a diversely populated area, data from clinical trials for Type 1, Type 2, and gestational diabetes held within Los Angeles County were analyzed. This was done by obtaining the racial and ethnic information of the participants from the study results that were posted on clinicaltrials.gov. Not all study results of clinical trials report the race and/or ethnicity of the participants. Therefore, if this information was provided, the clinical trial was said to have "referenced race" or "referenced ethnicity."

Preliminary/Final Results: We found that most clinical trials in Los Angeles for Type 1 diabetes do not reference race or ethnicity in the study results, and there were no clinical trials reported for gestational diabetes in Los Angeles. However, the majority (54%) of the 170 clinical trials for Type 2 diabetes did reference race and/or ethnicity. These trials were then organized into two groups, clinical trials that referenced race and clinical trials that referenced ethnicity. Within the 86 trials that referenced race, white participants make up 77% of the 115,534 participants involved, and the remainder 23% of the participants identified as either American Indian/Alaska Native, Asian, Native Hawaiian/Other Pacific Islander, Black/African American, More than One Race, Unknown, or Other. In comparison, when looking into the racial demographics of diabetic adults within Los Angeles in 2015, only 8.2% were white. Hence, the 86 clinical trials that referenced race do not accurately represent the racial diversity of the diabetic population within Los Angeles. When the 56 trials that only referenced ethnicity were analyzed, it was found that more than half (57%) of the 86,829 participants were Not Hispanic/Latino. Meanwhile, 19.7% of the participants identified as being Hispanic/Latino. Likewise, 10.7% of diabetic adults within Los Angeles in 2015 were Hispanic/Latino. There was no significant difference between the ethnic breakdown of the diabetic population within Los Angeles and the participants from the 56 trials that referenced ethnicity.

Conclusions/Implications: Overall, 86 clinical trials for Type 2 diabetes that only referenced race demonstrate racial disparity amongst its participants, but the 56 trials that referenced ethnicity accurately represent the Hispanic/Latino diabetic individuals within Los Angeles. Yet, the efforts made by the FDA, such as FDASIA Action Plan, to enhance diversity inclusion has yet to make an effect within clinical trials for Type 2 diabetes located in Los Angeles County. Therefore, more incentives should be implemented to encourage diversity inclusion within these clinical trials in order to promote more personalized and effective treatment for diabetes.

133-Impact of Pharmacist-Led Diabetes Management in a Federally-Qualified Health Center. Weil J, Weil J, Mills A, Beckett R, Manchester University. Email: jdweil18@gmail.com.

Objective: To assess the impact of a clinical pharmacist managing patients with type 2 diabetes mellitus (T2DM) at a federally qualified health center (FQHC) measured by T2DM Healthcare Effectiveness Data and Information Set (HEDIS) outcomes. T2DM is a chronic disease that affects over 30 million people in the United States. It is the seventh leading cause of death in the United States due to microvascular and macrovascular complications which can lead to increased morbidity, mortality, and also decrease health-related quality of life. By lowering hemoglobin A1C and remaining controlled can help prevent these complications of T2DM. To face challenges seen with uncontrolled T2DM, health teams are developing collaborative approaches to help manage chronic disease states such as T2DM. Pharmacists have begun to work closely with patients and healthcare providers to ensure proper implementation and monitoring of therapeutic plans to help improve patient's quality of life and reach specific outcomes. Services for pharmacist and justification for those services can be a common barrier to establish pharmacists as part of the care team. Utilization of HEDIS measures along with other outcomes in a FQHC can help display the impact pharmacists can have at improving outcomes in those with T2DM.

Methods: A single center, quasi-experimental study will be conducted at a FQHC. All patients will be included that are diagnosed with T2DM, at least 18 years old, and seen at least once in the last year at study site with their primary care provider. Patients with gestational diabetes and cognitive deficits such as Alzheimer's disease or dementia will be excluded. The primary objective will evaluate the percent of patients who achieve an A1C of less than 8% during the 6 months of pharmacist follow-up who had an A1C at least 8% at initial visit. Secondary objectives include pharmacist impact on reduction of A1C, patients reaching an A1C less than 7%, percent of patients who receive yearly full diabetic eye exams and foot exams, and percent of patients up to date on flu and pneumococcal vaccinations. The following data will be collected at baseline: age, sex, race, comorbidities, and microalbumin creatinine ratio at least 30 mg/dL. The following data will be collected at baseline and 6 months after initial pharmacist visit: A1C, renal function as measured by estimated glomerular filtration rate (eGFR), body mass index (BMI), record of appropriate pneumococcal and current season of influenza vaccination, duration of T2DM diagnosis, tobacco use, full diabetic eye exam completed, and diabetic foot exam completed. Assuming 80% power, a sample size of 30 patients is estimated to be adequate to

detect an effect of 50% of patients meeting a target A1C of less than 8%. Intent to treat (ITT) principle will be utilized and appropriate statistical tests for paired data will be employed using an alpha value of 0.05. The study is currently pending investigational review board (IRB) approval.

Results: Final results will be presented at the APHA 2020 national conference.

Conclusions/Implications: Results are expected to inform further development of the practice site.

134-Implementation of Pharmacist-Led Telehealth and Bluetooth Glucose Monitoring to Aid in the Management of Type 2 Diabetes in the Ambulatory Care Setting. Yager M, Tobin M, CHAS Health. Email: myager@chas.org.

Objective: The objective of this project is to determine the impact of pharmacist-managed telehealth and Bluetooth glucose monitoring on the management of type 2 diabetes (T2DM). Diabetes continues to be a rapidly growing disease state affecting many people in the United States. Due to its extensive complications and excessive cost, managing diabetes continues to be a popular topic within our healthcare system. A1C is a useful surrogate marker for assessing blood glucose control but carries some limitations on clinical utility. Therefore, even more information may be uncovered with access to the patient's actual blood sugar values. However, it is often difficult for patients to check their blood glucose and bring the results to their healthcare professional. Patients with diabetes often require close follow up, burdening them with multiple healthcare appointments. Utilization of telehealth and Bluetooth glucose monitoring has the potential to decrease treatment burdens on the patient and the healthcare system as well as make diabetes care more comprehensive. The goal of implementing this pharmacist-led service is to decrease treatment burden while improving blood glucose values and A1C.

Methods: Identify patients in the ambulatory care setting with uncontrolled T2DM with A1C > 9% and collect baseline data including A1C and blood glucose values using the electronic health record. The technology utilized will be iGlucose and Qure4u. Once candidates are identified, they will be set up with the required equipment as well as the necessary training to begin monitoring their blood glucose. Using iGlucose, blood sugars will be automatically uploaded to the Qure4u online platform. The clinical pharmacist will review the trending data and follow up with patients via telehealth on a regular basis. Statistical analysis of the A1C and blood glucose will be completed after 90 days of clinical pharmacist intervention to measure patient improvement. Patients will be asked to complete a questionnaire before and after the intervention to further assess success of the program.

Results: In progress.

Conclusions: In progress.

135-Canagliflozin and Renal-Related Adverse Events in Type 2 Diabetes and Chronic Kidney Disease: Results From CREDENCE. Zhang H, Peking University First Hospital, Mahaffey K, Stanford Center for Clinical Research, Li J, Neal B, Perkovic V, Neal B, UNSW Sydney, Agarwal R, Indiana University, Charytan D, New York University, De Zeeuw, Heerspink H, University of Groningen, Levin A, University of British Columbia, Wheeler D, University College London, Yavin Y, Janssen Research and Development LLC. Email: yyavin@ITS.JNJ.com.

Objective: Canagliflozin (CANA), a sodium glucose co-transporter 2 inhibitor, has been shown to reduce the risk of major renal outcomes in patients with type 2 diabetes and chronic kidney disease (CKD) in the CREDENCE trial. The aim of this analysis was to examine the incidence of renal-related adverse events (AEs) during treatment with CANA.

Methods: The CREDENCE trial randomly assigned 4401 participants with type 2 diabetes, CKD, and urinary albumin:creatinine ratio >300-5000mg/g to CANA 100 mg/day or placebo (PBO). Rates of renal-related AEs were analyzed using an on-treatment approach overall and by screening eGFR strata (30-<45, 45-<60, and 60-<90 ml/min/1.73 m2).

Results: The incidence rate of renal-related AEs was lower in the CANA versus the PBO group (Table), with consistent results for the majority of specific AEs, including acute kidney injury, azotemia, blood creatinine increased, glomerular filtration rate decreased, nephropathy toxic, renal failure, and renal impairment. The incidence rate for serious renal-related AEs was also lower in the CANA compared to the PBO group. The incidence rates of renal-related AEs were lower with CANA relative to PBO across three eGFR strata (HRs of 0.73, 0.60, and 0.81 for eGFR 30-<45, 45-<60, and 60-<90, respectively; P-interaction=0.31). Renal-related serious AEs were also lower with CANA relative to PBO across the three eGFR strata.

Implications/Conclusions: CANA decreased the incidence of serious and non-serious renal-related AEs in patients with type 2 diabetes and CKD. These data highlight the renal safety of CANA in this population.

Educating the Educators

136-Pharmacy Student Knowledge and Perceptions of ASHP-Accredited PGY1 Community-Based Residency Programs. Abuzir S, Clough C, Cross C, Jewel Osco, Winkler S, Midwestern University. Email: s.abuzir94@yahoo.com.

Objective: The purpose of this study is to assess the knowledge that current pharmacy students have regarding postgraduate year 1 (PGY1) community-based residency programs. There are currently 36 community-based residency programs across the country that are accredited by the American Society of Hospital Pharmacists (ASHP) and listed on their online residency directory. Despite efforts to market the programs and demonstrate their value, many students are unaware that they exist or are unfamiliar with their benefits.

There could be several reasons for this including poor representation of these programs in school curriculums or poor marketing of the residency programs to current students. In general, there is also little research available on PGY1 community-based residency programs. The research that has been conducted has always focused on past residents that have completed a community-based residency program or their career trajectory upon completing the program. At present, there is no research regarding what current pharmacy students know about community-based residency programs so it is unknown whether their knowledge is accurate or holistic. The primary objective of this study is to evaluate current pharmacy students' perceptions regarding PGY1 community-based residency programs. The secondary objectives of the study are to compare student perceptions by year in school and to contrast responses according to indicated career aspirations.

Methods: A 10-minute survey will be distributed electronically via Redcap to first through fourth year pharmacy students in approximately 12 pharmacy schools across the country. Questions will be a mix of multiple choice and those in the Likert scale format. The survey will also include demographic-based questions in order to gain a better understanding of what the student sample is like. The questions will incorporate elements of the ASHP accreditation standards in order to better assess student knowledge regarding the requirements of this type of residency program.

Preliminary Results: Research is in progress.

Implications/Conclusions: With the findings of this project, the objective is to bridge the gap in literature and better understand the perceptions that current pharmacy students have regarding PGY1 community-based residency programs and whether their knowledge of these programs is accurate and reflective of what these programs entail. After acquiring this information, the residency programs will be able to clarify any potential inaccuracies and market the programs in the most effective and beneficial way.

137-American Sign Language (ASL) Training for Pharmacy Students: Supporting Deaf and Hard of Hearing Patient Care. Bailey N, Whiting P, Burkey J, Sohn M, Ferris State University. Email: bailen10@ferris.edu.

Objective: The Accreditation Council for Pharmacy Education (ACPE) has listed in Standards 2016 that PharmD curricula should include an "exploration of the potential impact of cultural values, beliefs, and practices on patient care outcomes." Therefore, diversity in many forms must be addressed. With a prevalence of about one million d/Deaf and Hard of Hearing (HOH) patients that utilize American Sign Language (ASL) and the strong potential for communication barriers to adversely influence patient care outcomes, strategies must be developed to support healthcare professionals and students in learning to better care for d/Deaf and HOH patients. The primary objective of this project was to implement and assess a co-curricular course series focused on helping student pharmacists better understand Deaf culture and strategies for effective communication with d/Deaf and HOH patients.

Methods: The co-curricular course series (ASL for the Pharmacy Professional) consisted of four 90-minute classes in the Spring 2019 semester. Each class covered a different set of vocabulary, plus content on Deaf cultural competence. The analysis centered around pre-and post-surveys that contained an identical set of questions taken before the course began and at the culmination of the course. The surveys assessed confidence and level of comfort of student pharmacists' knowledge surrounding Deaf culture and interacting with d/Deaf and HOH patients with the use of interpreters and ASL. The data from this study was collected from first-and second-year pharmacy student attendees. The Institutional Review Board (IRB) approved the study design. Descriptive statistics were used to describe themes across both samples. Mann-Whitney U tests were used to determine statistical significance between groups before and after completion of the four-class series. Statistical analysis was completed utilizing Stata Version 13 (College Station, TX) and Microsoft Excel Version 16.28 (Redmond, WA).

Results: A total of 41 students registered for the ASL for the Pharmacy Professional class series. Of those, 39 students attended the first class and were therefore eligible to complete the survey. The second class was attended by 38 students, with 35 students attending the third class, and 34 students attending the final class. Of the 39 participants, 36 (92.3%) filled out the survey prior to the class series and 34 (87.2%) filled out the survey after completing the class series. At the culmination of the class series, students reported significantly improved confidence in communicating with d/Deaf and HOH patients directly and with an interpreter. Additionally, students reported a significant increase in knowledge of the d/Deaf and HOH community.

Conclusions/Implications: Following completion of a co-curricular ASL course series, PharmD students perceived an increase in confidence in working with d/Deaf and HOH patients. The logistics of the program were substantially simplified by collaboration with an outside entity focused on supporting the Deaf and HOH communities.

138-Knowledge, Attitude, and Practices Among Faculty Regarding Community Pharmacy Post-Graduate Training. Brown A, Hughes T, Robinson J, Ferreri S, University of North Carolina. Email: anbr@live.unc.edu.

Objective: The objective of this study is to determine the knowledge, attitudes, and practices that pharmacy faculty have regarding community-pharmacy post-graduate training (PGT). This project is developed around the hypothesis that a lack of knowledge or perceived value among faculty lead to students not pursuing various forms of community PGT. Pharmacy residency programs began in the hospital setting in the 1930s. Community-pharmacy residency programs followed in the 1980s. Both serve to develop clinical skills and advance patient care provided by pharmacists. Students are aware of both programs, however there is a difference between the growth of community-based and hospital residencies. Faculty influence is frequently cited as a significant reason why students choose to pursue PGT. New PGT opportunities for those interested in community pharmacy include independent pharmacy ownership

residencies and community pharmacy academic fellowships. The expansion of PGT opportunities may make it difficult for faculty to advise students on which program to pursue.

Methods: This study is a prospective, cross-sectional analysis of pharmacy faculty and their relationship to community pharmacy PGT. A web-based survey will be distributed to pharmacy faculty members at 50 pharmacy schools based upon 2019 residency match rates. The data collection tool is a "Knowledge, Attitudes, and Practices" (KAP) survey administered through Qualtrics using a modified Dillman's design. Faculty members will be recruited by requesting contact information from each identified pharmacy school for faculty who serve in mentor roles. The survey will be distributed by email to the faculty members. Descriptive statistics will be utilized to identify gaps and trends that would support or reject the hypothesis.

Preliminary Results: Data will be collected from October through December 2019 and analysis will occur in January 2020.

Implications: The study will help identify gaps and guide efforts to improve knowledge and perceptions of community pharmacy PGT among faculty. With the changing healthcare landscape, there is an increased need for collaborative healthcare services and pharmacists in the community to provide direct patient care. If more pharmacy faculty are aware of the existence and value that community PGT brings, more students may pursue these opportunities.

139-Impact of a Standardized Teaching Tool on Preceptor Perception of Criteria-Based Feedback in Community-Based Pharmacy Residency Settings. Brown C, Woodyard J, Purdue University, Smith H, Topeka Pharmacy. Email: carolina@topekapharmacy.net.

Objective: The objective of this study is to determine if the utilization of a standardized teaching tool improves preceptor perception and use of criteria-based feedback (CBF) in summative evaluations of Postgraduate Year One (PGY1) community-based pharmacy residents. Accrediting standards for these residencies note the provision of CBF as being essential for resident skill development and therefore an important factor for consideration of program accreditation. However, these standards offer minimal guidance on the implementation of CBF into the summative evaluation of residents. Increasing the perception and use of CBF in this process could help better position residency programs to maintain or achieve accreditation status.

Methods: This single-arm, pre-post, interventional study will include residency preceptors in community pharmacy settings across the United States. This study will evaluate the usefulness of a standardized teaching tool in improving preceptor perceptions and use of CBF during summative evaluations of pharmacy residents. Participants will be asked to complete two surveys throughout the study in addition to reviewing the standardized teaching tool developed by investigators. The tool will provide participants with an opportunity to review the concept of CBF, become familiar with the emphasis placed on it by the accrediting standards, and receive advice for its implementation into the evaluation process. Participants will be purposefully recruited using the American Society of Health-System Pharmacists (ASHP) online residency directory. In order to be eligible, participants must be active preceptors in PGY1 community-based pharmacy residencies either accredited by or pending accreditation from ASHP. Data will be collected at two separate times throughout the study via pre-tool and post-tool surveys administered using Qualtrics. Pre-tool survey questions will be completed after the first quarterly summative evaluation and address participants' demographics, precepting background information, and residency program background information. Post-tool survey questions will be completed after review of the standardized teaching tool and implementation of CBF into the second quarterly summative evaluation. The post-tool survey questions will address participants' use of the standardized teaching tool, implementation of CBF into the second quarterly summative evaluation, and the perceived benefit of the provided tool. Both the pre-tool and post-tool survey questions will also evaluate participants' understanding of, confidence in providing, and usage of CBF in the evaluation process. Paired responses to the pre-tool and post-tool surveys will be compared in order to evaluate preceptor perceptions of CBF before and after review of a standardized teaching tool and implementation of CBF into the summative evaluation of residents. The resulting data will be analyzed using a paired t-test or McNemar's test. Purdue University's Institutional Review Board has determined that this study qualifies for exemption from review.

Preliminary Results: Results to be presented at the APhA annual meeting.

Implications/Conclusions: The information gathered from this study will allow us to address an existing gap in criteria-based feedback research while contributing to further improvement in residency program development.

140-Utilizing Gagné's Events Of Instruction to Develop Patient Care Provider Entrustable Professional Activity Readiness (Pre-Entrustment) Among Student Pharmacists. Chen J, Accreditation, Academic Affiars, and Assessment. Email: jackjchen@msn.com.

Objective: Entrustment is defined as the informed belief that a learner is qualified to autonomously perform specific patient-care activities. Entrustable professional activities (EPAs) are defined as tasks or responsibilities that learners are entrusted to perform unsupervised once they have obtained sufficient competence. The American Association of Colleges of Pharmacy finalized and published a final list of core EPAs (within six domains) for pharmacy graduates in 2017. The objective of this report is to evaluate the impact of an instructional framework that blends active learning (learner-centered constructivist) with Gagné's learning model (teacher-centered cognitive) in teaching student pharmacists to provide medication counseling to patients during the pre-entrustment stage for the "Patient Care Provider" domain.

Methods: The instruction was implemented and delivered to student pharmacists in the first professional year and prior to enrollment in introductory pharmacy practice experiences. Lesson planning, instructional flow, and activity sequencing was based on Gagné's cognitive learning theory and nine events of instruction (see poster details). Active learning fulfilled the classic definition by Bonwell

and Eison (1991) and included classroom discussions, videos, simulation practicum, and formative feedback. Learning outcomes were assessed with criterion-based rubrics based on taxonomic levels of cognitive, psychomotor, and affective performance during an objective structured clinical examination (OSCE). Student pharmacists were provided a list of medications and confounding clinical variables a priori. Student assignment to medications and clinical variable scenarios were randomized and student-blinded prior to the OSCE. The OSCE performance was video-recorded and utilized scripted actors as patients and multiple clinical care scenarios. Assessment of learning outcomes was performed by faculty review of videos with feedback available to students and an a priori adjudication process for performance remediation. High impact practices for each of nine events were derived by experience and empiric observation. Instructor agency was guided by knowledge building principles.

Results: The activity was delivered to two cohorts of student pharmacists (total N = 93). All students accessed the pre-session reading and video material. Two instructors served as OSCE facilitators and twelve instructors as OSCE evaluators. Pairing students into dyads (pairs) facilitated peer teaching and empathy during face-to-face patient counseling practice simulations during class sessions. Utilization of rubric-based assessment with directed observation aided by video technology, standardized actor patients, and standardized, criterion-based scales improved fidelity of assessment. Fourteen students (15.05%) failed to achieve required pre-entrustment proficiency in the activity. During and after the lesson, students reported transient performance anxiety but overall enhanced knowledge and skill retention with the given instruction, flow, and formative/summative assessments.

Implications/Conclusions: This pedagogic approach embeds Bonwell and Eison's constructivist active learning within Gagné's cognitive learning model and nine steps of instruction to provide curation and design of learning and assessment of patient counseling skills as a supporting task for EPAs. The model is generalizable to other skills topics and supporting tasks to develop pre-entrustment (EPA readiness) for the various EPA domains early in the curriculum and in preparation for entrustment activities during latter stages (e.g., experiential education).

141-The Impact of International Advanced Pharmacy Practice Experiences on Student-Perceived Career Preparedness. Drame I, Wingate L, Law M, Karodeh Y, Hailemeskel B, Howard University. Email: imbi.drame@howard.edu.

Objective: Evidence suggests that students who complete international experiential rotations acquire a unique set of skills that prepare them for practice in a diverse array of healthcare settings and patient populations. International Advanced Practice Experiences (APPEs) may also assist students with achieving a high level of self-perceived career preparedness. Heretofore, few studies have examined student perceptions about which coursework best prepared them for international APPEs and what career plans may drive students to select an international APPE rotation. Howard University College of Pharmacy formally offers international APPEs to fourth-year students. Using a survey, feedback was collected from students who had completed international APPEs within the past 3 years. Students surveyed had traveled to six different countries, including South Africa, Ethiopia, South Korea, India, Ghana, and Jamaica. Objectives: The objective of this study was to evaluate survey responses from students who had completed an international APPE to determine overall perceptions regarding 1) courses that best prepared them for the international experience, 2) types of skills-based activities students engaged in while at the international sites, and 3) career motivators (post-graduate plans) for students who completed an international APPE.

Methods: A post-experience survey, inclusive of both demographic information and an experience-based questionnaire, was administered to all students who participated in an international APPE between 2016 and 2019. The survey tool was distributed to 55 students during the period under evaluation. The survey tool assessed which didactic courses students found most helpful, immediate post-graduate plans, long-term career plans, types of activities engaged in during the international APPE, and beliefs about the degree to which the international experience prepared them for pharmacy practice. Results were collected between August 2018 and April 2019.

Results: Twenty-seven participants responded to the survey. The majority of respondents had completed their international APPEs in 2017 (48.1%) and had completed their experiences in South Africa (50%). Most (57%) of the respondents believed that the biostatistics/research methods course best prepared them for the international APPE. A similar number of respondents planned to complete a residency, fellowship, or enter the workforce immediately after graduation. The majority were seeking a career in either pharmaceutical industry (32.1%) or ambulatory care (25%). During their international experience, most students engaged in research or data collection. Greater than 90% of respondents believed that the skills learned during their experience could be applied to their intended careers, and that the experience contributed to their professional development.

Conclusion/Implications: The high response rates for biostatistics/research methods as a preparatory course, and research/data collection as a key activity during international APPEs may be attributable to the emphasis placed on public health by many international APPEs. Students who complete international APPEs also appear to possess high levels of self-perceived preparedness for their intended careers. This underscores the importance of ensuring the availability of international opportunities for pharmacy students within pharmacy curricula. Although these opportunities may best serve students interested in careers related to industry or direct patient care, activities completed during international APPEs can provide solid preparation for an array of career fields.

142-Pharmacy Residents Perception of Value of a Teaching Certificate Program. Enderby C, Mayo Clinic. Email: enderby.cher@mayo.edu.

Objective: The objective of this project was to compare pharmacy resident confidence in teaching related activities prior to,

immediately after, and 1-year post completion of a teaching certificate program. Teaching, Education, and Dissemination of Knowledge is a required competency area for American Society of Health-System Pharmacists (ASHP) Accredited Post Graduate Year One (PGY1) Pharmacy Residency Programs. Residents perform various activities to fulfill the educational goals and objectives including providing formal presentations, journal clubs, and in-services along with co-precepting pharmacy students. A growing number of PGY1 Pharmacy Residency Programs offer the option of completing a teaching certificate during the residency year. The residents from our program had the opportunity to participate in a teaching certificate program beginning with the residency year 2017-2018. The purpose of this project was to determine the perception of value of incorporating a teaching certificate program to our residency program.

Methods: The ASHP Teaching Certificate for Pharmacists program was utilized. The certificate program includes 16.5 credit hours divided in 11 modules: Understanding Academic Pharmacy, Technical Aspects of Learning, Designing and Assessing the Learning Experience, Presenting Data and Setting the Rules, Additional Considerations for Program Development, Documenting Your Educational Plan, Academia: The Big Picture, Managing and Assessing in the Classroom, Getting Ahead: Pearls for Higher Education, Foundations of Experiential Teaching, and Specialty Experiential Teaching Skills. Additionally, the resident must develop a teaching philosophy and teaching portfolio. Prior to starting the teaching certificate program modules, a pre-survey was given to the pharmacy residents to assess their confidence in different teaching activities. The learning modules were viewed and discussed during the months of September 2017 through May 2018. The PGY1 Residency Program Director served as the teaching certificate program mentor for each resident. Upon completion of the teaching certificate program, the residents completed a post-survey. One-year post teaching certificate completion, another survey was sent to the participants. The same questions assessing confidence relating to a teaching activity were assessed during all three surveys. Scores of the survey answers were summarized as median and range. The answers to each question at immediate post and 1-year post teaching certificate completion were compared to pre teaching certificate using signed rank test. All tests were two-sided with alpha level set at 0.05 for statistical significance.

Results: All four residents from the 2017-2018 PGY1 Pharmacy Residency Class completed the teaching certificate program and provided survey responses at all three time points. The pre-survey scores were 108 (range: 91-116), post-survey scores were 166 (Range: 146-170), and 1-year post survey scores were 136 (Range: 124-170). There were significant differences in scores when comparing post versus pre survey ($p=0.028$) and 1 year versus pre-survey responses ($p=0.029$).

Implications/Conclusions: The pharmacy residents expressed increased confidence in teaching related activities after completion of the teaching certificate program. An improvement in scores was seen when comparing pre-survey to post-survey and 1-year post survey after teaching certificate completion. Additional data from a larger number of participants is needed to confirm the findings.

143-Preceptor Perceptions of Contemporary Practice Skills Amongst New Graduates Amid Community Pharmacy Transformation. Ensley T, Dowling-McClay K, Gray J, Crowe S, Alexander K, East Tennessee State University. Email: ensleyt@etsu.edu.

Objective: As community pharmacy transitions from a fee-for-service model to a focus on value-based care, the desired skills of pharmacist graduates in contemporary community practice is an evolving paradigm. Pharmacy preceptor assessment of contemporary practice skills essential for new graduates should be considered as a literature gap. These preceptors are stakeholders in a unique position to compare the dichotomy of the current climate of community practice with the preparedness of graduating students to enter this field. Objectives: 1) To identify essential skills for new graduates entering contemporary community pharmacy practice as perceived by current practitioners; and 2) To evaluate perceived practice readiness of final year student pharmacists to enter contemporary community pharmacy practice.

Methods: Researchers developed a web-based survey to be administered to active Advanced Pharmacy Practice Experiences (APPE) preceptors overseeing community-specific rotations affiliated with the college of pharmacy. The survey is divided into four sections: 1) preceptor demographics; 2) assessment by the preceptor of what denotes “contemporary” service offerings in community practice along with an evaluation of which of those services are offered at their practice site; 3) ranking valuation of the importance of thirty-five skills/areas of knowledge for graduates entering contemporary community practice focusing on foundational patient care competency areas, management and leadership mentality, utilization of informatic systems, professional personality traits, communication skills, and interprofessional interactions; and 4) preceptors’ ranking of current graduates’ readiness to enter contemporary community pharmacy practice. Questions in section 1 will be in a multiple-choice format, section 2 will be multiple response (select all that apply), and sections 3 and 4 will use Likert (ordinal) scales. The survey link, using REDCap (Research Electronic Data Capture), will be distributed via email to community pharmacists from the college’s preceptor pool with regional practice sites.

Preliminary Results: Data collection is anticipated to begin in December 2019 following approval from the University’s Institutional Review Board (IRB). Participating preceptors will have a 4-week window to complete the survey, with email reminders weekly.

Implications/Conclusions: Assessment of preceptor perceptions of essential skills for new graduates entering contemporary community pharmacy practice will help inform the development of relevant and evidence-based curricula, both didactic and experiential training, to advance the preparation of students entering the evolving climate of community pharmacy practice. Community pharmacy stakeholders will, in turn, benefit from the resources and skills that progressively-trained graduates bring to the workforce.

144-Gamification: A Quality Improvement Project to Assess the Effect of Game-Based Learning on Drug Card Knowledge. Fisher D,

Pham K, Obimah A, Le J, Huynh D, Desai A, University of Houston. Email: drfishe2@central.uh.edu.

Objective: Our goal is to test whether game-based learning will effect student performance on curriculum-based assessments related to the medication information incorporated into an escape room. Pharmacy students find themselves memorizing heavy amounts of material everyday. It is imperative for students to develop a strong foundation of knowledge in order to grasp more complex concepts in later years of pharmacy school curriculum and eventually, in practice with real-life scenarios. One of the foundations needed to succeed in practice is memorizing information about medications, such as drug cards. The process of learning has changed over the last decade and this change has now found itself in the classrooms of pharmacy schools across the country. Wanting to promote this newfound change, the American Association of Colleges of Pharmacy (AACP) Academic Affairs Committee report promoted the use of game-based learning in the development of future pharmacists. Compared to traditional classroom setting learning, game-based learning is an innovative tool for students to use for learning and retaining assigned material.

Methods: We will include approximately 125 first-year, full-time pharmacy students in our study. Within the students' first year, they will have a total of five modules of drug card information to learn. The students will be exposed to traditional curriculum-based learning, which includes, but is not limited to: PowerPoint, Kahoot!, Quizlet, and Jeopardy. During one module, we will distribute the students into random groups of four to five students and have the group participate in the game-based learning experience (escape room). After this intervention, we will compare the curriculum-based assessment scores between modules with and without the intervention.

Results: (or Preliminary Results for Reports on Projects in Progress) The results on academic performance with or without the intervention (escape room) are currently pending.

Implications/Conclusions This intervention is applicable to other pharmacy and non-pharmacy related curriculums to successfully achieve academic objectives. Iits effectiveness will be determined when comparing the students' academic performance on curriculum-based assessments with and without the intervention.

145-The Impact of a Live Standardized Patient and Demographics Differences In Knowledge Retention Among Pharmacy Professionals on Opioid and Naloxone Administration Training.Hailemeskel B, Bush A, Francis A, Daftary M, Singh D, Howard University. Email: bhailemeskel@howard.edu.

Objective: The goal of this study was to determine the impact of demographic characteristics as predicting factors in the improvement of learning outcomes using a post education follow up survey. Participants are pharmacy professionals from various area of practice who registered to attend a conference hosted on pain management and REMS opioid management. It is known that the use of a standardized patient in medical education is a common practice. However, the effect of demographics on the efficacy of this educational method on both knowledge retention and clinical and professional skills not well documented. An all-day symposium was held on opioid pharmacology and naloxone administration at our institution using the Food and Drug Administration Blueprint. The education program was held from 8 am to 5 pm and approved for a total of 6 Accreditation Counsel for Pharmacy Education continued education (CPE) credit. The overall symposium was supported from a grant by REMS Program Companies. Several topics presented related to pain management focusing on the pharmacology and proper use of opioids. A case was developed, a live, standardized patient was trained, and the participants were given a case scenario as a home study prior to the conference. At the beginning of the symposium, the standardized patient was presented and interviewed. Then, all the symposium speakers were given the case and asked to integrate it into their talks. By the end of the symposium, a debriefing session was held. Out of 298 participants who registered for the conference, 214 completed the survey to receive their CE certifications. There was a total of 24 self-administered questions on the survey. The data was collected and predicting factors, including age, gender, and race, will be analyzed to determine if those factors are associated with improved knowledge retention and pharmacy practice skills. The results will give educators an additional effective teaching tool to consider incorporating into their courses as determined.

146-Improving Knowledge Retention in the Management of Pain and Opioid Crisis Among Pharmacy Professionals Using Standardized Patient Continuing Education. Hailemeskel B, Francis A, Howard University. Email: bhailemeskel@howard.edu.

Objective: Opioids crisis is a national issue taking the lives of many in the United States. Adverse outcomes of addiction, unintentional overdose, and death resulting from inappropriate prescribing, abuse, and misuse of opioids have emerged as major public health problems. It is critical that pharmacy professionals, as a member of healthcare professionals, are knowledgeable about the risks associated with opioid analgesics as they pertain to their patients as well as from a public health perspective. Several training programs have been developed and various modes of educational delivery and evaluation methods had been incorporated into pharmacy curriculum to encourage the development of problem solving and critical thinking skills among pharmacy students. Standardized patients in undergraduate health-related education is recognized broadly in the literature as it can improve patient safety, provides a nexus between theory and practice, and improves work readiness of graduates. However, the documentation in the literature on the values or the impact of standardized patients to educate practicing pharmacy professionals is scarce. AIM The aim of this study is to explore the impact and value standardized patients as a teaching strategy on retention of knowledge among practicing pharmacy professionals.

Method: A symposium is scheduled to be held at Howard University for pharmacy professionals that include pharmacists, pharmacy technicians, pharmacy students, etc. to address a wide range of topics related to the opioid crisis and pain management issues. A

standardized patient case was developed and sent out to symposium participants prior to the live presentation as a home study and was given 1.0 ACPE accredited continuing professional credit. At the beginning of the live symposium, the paid standardized patient was asked to have a dialogue to discuss the case on the podium with a facilitator. The other speakers throughout the day who were called to present the various topics were given the standardize case ahead of the symposium and asked to incorporate the case into their topic area. At the end of the symposium, the standardize patient was brought back to the stage and a debriefing of the case was presented to the audience.

Evaluation: Evaluation of its effectiveness was conducted right after the conference as participant attempt to claim their CE credits. The evaluation also be done at three months using a focus group with trained facilitator. Over 300 participants are expected to participate in the symposium. The result will be presented in two sets. The first evaluation done immediately after the symposium and later a second set of report will be compiled once the focus group evaluation was concluded.

Conclusion: The use of standardized patients in pharmacy education is increasing. We believe the use of standardized patient is instrumental in improving retention of the essential knowledge, clinical skills, and professional attributes required for practice.

147-The Effectiveness of an Education Program Designed to Improve Community Pharmacist's Knowledge and Comfort When Counseling Patients Receiving an Opioid for the First Time. Leung Y, Peck K, Barner J, Rush S, Moczygemba L, Zhu E, Eter R, University of Texas-Austin, Stallings A, Leckbee G, H-E-B. Email: yunghleung@gmail.com.

Objective: The opioid crisis is an issue at the forefront of public health. According to the CDC, over 130 people die from drug overdoses every day with two-thirds of the deaths due to opioids and 36% of those deaths are from prescription opioids. Pharmacists play an important role in evaluating the appropriate usage of opioids and counseling patients or their caregivers on their medication. Pharmacist interventions include counseling, medication therapy management, collaborating with other healthcare professionals, assisting transitions of care, and training patients on the use of naloxone. Community pharmacists are the most accessible health care provider and are positioned to make a significant impact on the opioid crisis. Despite this, it has been reported that many pharmacists feel uncomfortable discussing opioid use and risks with patients. Many pharmacists are also hesitant to offer naloxone. It has also been reported that a lack of training on communication strategies is a barrier to delivering effective opioid counseling. The aim of this research is to evaluate the effectiveness of an educational program on pharmacists' knowledge and comfort in counseling patients on opioid prescriptions.

Methods: An educational program has been designed to educate community pharmacists on how to talk to patients about their new opioid prescription and to offer naloxone. The education program provides evidence-based templates to guide pharmacists in asking appropriate questions and using proper terminology when discussing opioids with patients. The program consists of 2 parts; it contains a video component followed by a role-play scenario and an active participation component to allow pharmacists to practice the principles taught in the training. A survey consisting of Likert scale and open-ended questions will be administered to community pharmacists in a regional supermarket chain before and after the training to assess the effectiveness of the program. The results will be reported as changes of knowledge and comfort from pre-to post-survey results. This design assesses the functionality and effectiveness of the educational program. In addition, information will be collected in order to improve the program for future use. No identifying information will be gathered from the participating pharmacists and Investigational Review Board approval has been granted.

Results: Research in progress.

Conclusion: Research in progress.

148-The Need for Climate Change and Emergency Preparedness Education in Pharmacy Schools. Linder E, Becker J, Peterson A, University of the Sciences Philadelphia. Email: elinder@mail.usciences.edu.

Objective: Creating the healthiest nation requires knowledge about climate change and emergency preparedness. What do American Council for Pharmacy Education (ACPE) accredited schools/programs that offer a Doctorate of Pharmacy (PharmD) teach about climate change and emergency preparedness? And do these educational curricula make the connections between climate change and emergency preparedness? Objective: To evaluate ACPE accredited PharmD programs for climate changes and emergency preparedness courses.

Methods: Performing a manifest content analysis, each PharmD curriculum was examined to assess 1) climate changes courses; 2) emergency preparedness courses; 3) if other courses from disciplines outside pharmacy offered climate change and emergency preparedness courses/degrees and could pharmacy students take those courses.

Results: The preliminary results have shown that very few schools offer courses with emergency preparedness addressed within the course content. There are even fewer courses available to pharmacy students that offer climate change. Within the universities, other graduate programs (sustainability, geosciences, geography, urban studies, etc.) offered courses on climate change but were unavailable to pharmacy students. Other graduate programs that offered courses on emergency preparedness included public health and social work, but those courses were also unavailable for pharmacy students to take.

Conclusions: As an aspiring pharmacist and public health practitioner, I will be responsible for treating people affected by climate

change and potential disasters caused by climate change. It is essential that ACPE accredited pharmacy schools prepare future generations of pharmacists to address mitigation and adaptation strategies. Climate change is multi and interdisciplinary, and will influence much of emergency preparedness in the future. The need to partner with alongside other disciplines within an academic setting is necessary to increase climate change and emergency preparedness offerings. By partnering, pharmacy programs can gain an opportunity to train students about climate change and emergency preparedness, and make a major difference in population health.

149-Assessing Long-Term Retention through Simulation in a Re-Exposure Gaming Experience. Luu J, Buchman C, Frazier K, Washington State University. Email: justin.luu@wsu.edu.

Objective: To assess the effectiveness of a simulation game in promoting retention of pharmacotherapy and pharmaceutical knowledge in third-year pharmacy students. Background: Re-exposure to content is a core component of long-term retention. With APPE rotations and the NAPLEX looming ahead, third-year pharmacy students stand to tremendously benefit from enhanced retention. Both repeated memory tests and spaced learning intervals are examples of methods shown to significantly improve long-term retention. Both strategies are incorporated into a novel simulation gaming experience designed to engage students.

Methods: Students will be initially tested with a retention check quiz containing material presented in their first, second, and third years of pharmacy school. Quiz content includes information from the following courses: Top 200 Drugs, Pharmacotherapy, and Applied Patient Care (APC). Following the quiz, students will participate in the re-exposure simulation game during their scheduled APC lab times. During the game simulation, students, working in groups of three to five, will be presented with five different patient profiles and tasked with matching a suspect profile with a patient profile based on pharmacology, pharmacokinetics, and pharmacotherapy treatment guidelines. Students are then debriefed as a whole lab section on the various disease states discussed during the game simulation. Immediately following the game intervention, students will participate in an anonymous survey to discuss feedback and satisfaction. Two months later following winter break, students will be retested with the same retention check quiz given prior to the game intervention. Scores from retention checks will be compared and analyzed. Survey responses will be assessed for satisfaction and feedback, to improve the experience for future class cohorts.

Results: To be determined. Game simulation to be completed November 2019. Data collection to be completed January 2020.

Conclusions: To be determined.

150-An Evaluation of Adverse Drug Reactions Across Databases. Moore H, Volgyi D, APhA-ASP, Giuliano C, McConachie S, Wayne State University. Email: fo8589@wayne.edu.

Objective: Formatting of drug information impacts risk-benefit interpretation of medications by both patients and healthcare providers. A previous research study found that the formatting of adverse drug reaction (ADR) information significantly influenced how likely pharmacists and pharmacy students were to attribute a potential ADR to a corresponding medication, even if the likelihood of medication-induced ADR was very low. The purpose of this project is to determine the current formatting variations of basic ADR information in commonly used drug information databases.

Methodology: This is a cross-sectional analysis of ADR formatting among seven commonly-used drug information databases including Micromedex, Micromedex In-depth answers, Epocrates, Lexicomp, Clinical Pharmacology, RxList.com, and Physicians Desk Reference (pdr.net). Databases will be assessed for the following ADR information: presence of placebo comparisons, severity assessment, onset information, qualitative vs. quantitative frequency information, word count, and formatting style (bullets vs. paragraphs vs. tiered hierarchies). Twenty commonly-used oral medications will be assessed in each database to obtain a representative sample. Data will be collected independently by two investigators and discrepancies will be resolved via consensus. Descriptive statistics will be used to describe and categorize ADR formatting results among the different databases.

Results: Results currently pending, will be complete and reportable by poster submission date.

Conclusions: Variations in formatting for adverse drug reactions have the potential to influence clinical decision-making. Knowledge of formatting differences can be used to optimize drug information practices among pharmacists and other healthcare providers.

151-Thematic Analysis of an Escape Room Activity to Simulate Grant Submissions: **Grant DEADline.** Oestreich J, University of Findlay, Hunt B, EY Advisory Services, Cain J, University of Kentucky. Email: julie.oestreich@findlay.edu.

Objective: The objective of this project was to evaluate the effectiveness of a novel escape room activity to simulate the grant submission process. The grant submission process is a puzzle, requiring specialized knowledge, persistence, and skilled communication with numerous stakeholders and administrators. Our activity emphasized university policies and procedures, location of physical resources, communication, time management, and other soft or transferable skills. Imagine a room where highly-engaged participants search for grant opportunities, identify errors in proposal documents, solve research-related clues to open locks, contact a collaborator for final versions, physically locate an important resource, and ultimately meet a senior leader to request special permission, all while the clock is ticking.

Methods: In this project, we implemented a live-action game to simulate the grant submission process and assessed the impact on learning with a survey, in-person interviews, and thematic analysis (IRB approval, #42474). Nineteen trainees in the graduate program completed the activity during normal class time (50-minute class period) as part of an introductory course. The specific learning

objectives for the activity included the following: 1. investigate common grant opportunities; 2. review internal processes; 3. role-play communication with administrative and faculty stakeholders; 4. extrapolate the time required to submit a proposal; and 5. manage factors that can derail a submission. To meet the learning objectives, we designed an elaborate escape room that required students to complete several steps that simulated a submission while navigating puzzle components, including hidden clues throughout the room that provided numerical hints to open a locked box. Student perceptions of the escape room experience were gathered via individual interviews. Each interview was conducted, recorded, and transcribed by one team member using an investigator-developed interview guide based on recommendations Jacob and Furgerson (1). The transcriptions were then reviewed by all three investigators for qualitative thematic analysis as described by Braun & Clarke (2) to identify, analyze, and report on consistent patterns and themes from the interviews.

Results: Of the 18 students who fulfilled the consent process, eight (44%) verbally agreed and completed semi-structured interview to share their perspectives. The most common themes for emotions, thoughts, and attitudes experienced by participants included exciting (n=5), fun (n=4), and stressful (n=3). Thematic analysis also identified common themes for participants' experiences as compared to traditional didactic instruction including: 1. this activity was better than didactic instruction (n=5); 2. the activity was conducive to learning (n=5); and 3. the activity was enjoyable (n=3).

Conclusions/Implications: We explored an innovative teaching method—escape room games—to simulate grant submissions and familiarize graduate students to internal processes and resources. We tailored learning objectives to target technical and relational aspects within a realistic, timed setting. Interviews and subsequent thematic analysis identified many positive themes for the activity and some disadvantages. Others could leverage escape rooms as a flexible training tool for developing new faculty, trainees, and others. 1. Jacob and Furgerson. Qual Rep. 2012;17(42):1-10. 2. Braun and Clarke. Qual Res Psychol. 2006;3(2):77-101. Encore: Session presentation at the Society of Research Administrators International Annual Meeting, Orlando, Florida on 10/30/18.

152-**Nailed It! Doctor of Pharmacy Students' Self-Awareness of Performance on Objective Structured Clinical Examinations (OSCE).** Sermersheim K, Raake S, Leslie K, Daugherty K, Sullivan University. Email: ksermersheim@gmail.com.

Objective: The objective of this study was to assess Doctor of Pharmacy (PharmD) students' self-awareness of their performance on Objective Structured Clinical Examinations (OSCE). OSCEs in pharmacy education are experiences that link didactic learning to simulated real-world cases with the use of standardized patients to improve students' skills necessary for success in their respective career paths. According to the Center for the Advancement of Pharmacy Education (CAPE) Outcome 4.1, by the end of the PharmD program, students should display self-awareness defined as "the ability to examine and reflect on personal knowledge, skills, abilities, beliefs, biases, motivation, and emotions that could enhance or limit personal and professional growth." Having students self-assess performance on the OSCEs is one way to help students develop self-awareness in the practice setting as OSCEs are set-up to mimic real-world practice situations.

Methods: Data were compiled from a retrospective review of OSCE data of a single cohort of students in a 3-year accelerated PharmD program. Throughout their didactic education, the cohort completed 4 OSCEs with a combined total of 23 discrete cases covering numerous content areas including medications, self-care, communication, law, calculations, and clinical knowledge. At the end of each case, prior to receiving feedback, students were required to complete an evaluation of their skills, communication, and overall performance on each case. Students were asked to state whether they "nailed or failed" each component. These self-evaluations were then compared with the respective student performance scores for each case. A Cronbach alpha test for the reliability and content (face) validity was conducted on each of the OSCE cases as well as the nailed it/failed it assessment.

Results: Data analysis will be completed by February 2020.

Implications/Conclusions: This study provides an assessment of OSCE performance self-awareness in the developing student pharmacist. Results from this study may guide student remediation plans related to OSCE performance and development of other self-awareness activities. By utilizing the results from this study in other settings, the students who are self-aware of their performance may be able to recognize more areas of self-improvement.

154-Reliability of Student Pharmacist Self-Assessment in Patient Counseling. Zelinski A, Fairleigh Dickinson University. Email: azelinski@fdu.edu.

Objective: To determine if student self-assessment of patient counseling is reliable compared to faculty assessment using a standardized rubric. Self-assessment is a method utilized in academia to enhance student self-awareness of knowledge, skills and abilities. As a key element of the Accreditation Council for Pharmacy Education (ACPE) standards, self-assessment is required to be used in pharmacy education. Incorporation of this type of assessment into the pharmacy curriculum allows student-pharmacists to acknowledge their strengths and weaknesses, identify gaps in learning, and set appropriate learning goals. There is a striking lack of evidence that self-assessment is effective in the student pharmacist sub-population, despite its high utilization amongst schools of pharmacy and health sciences. It is imperative that students advance their self-assessment skills prior to professional practice, because self-directed learning is the core of continuous professional development.

Methods: Second-year student pharmacists enrolled in Integrated Pharmacotherapy Connections lab at Fairleigh Dickinson University School of Pharmacy & Health Sciences were video recorded during two patient counseling simulation activities. Students and faculty

each watched the recording and scored the counseling session using a standardized rubric. Students could select "performed" or "not performed" for each item on the rubric, yielding a maximum score of 100%. The difference between the faculty's grade and the student's self-assessment grade from each exercise was calculated in order to assess the reliability of student self-assessment. Rubric scores from students and faculty were not calculated into the student's final course grade. These results were also stratified by gender and by student performance to reveal additional trends. Data was analyzed using a paired student t-test (α=0.05). This study was determined to be IRB exempt by Fairleigh Dickinson University.

Final Results: 74 students and 1 faculty participated in the study. The data from the first exercise revealed a mean difference of +2.65% [-15% to 18%], $p = 0.001$ (Figure 1) between faculty grades and student self-assessment grades. The mean difference increased in the second exercise to +7.02% [-11% to 30%], $p < 0.001$ (Figure 2). Subgroup analysis showed a decreased difference between faculty and student grades as student performance increased. The lower 25th percentile of students overestimated their grade by 14.83% in exercise 2, compared with the upper 25th percentile of students who overestimated by 2.75% (Figure 4). Additionally, male students scored themselves an average of 4.78% ($p < 0.001$) and 8.88% ($p < 0.001$) higher than faculty in exercises 1 and 2 respectively, compared to female students 1.56% ($p = 0.15$) and 6.02% ($p < 0.001$).

Conclusion: Second-year student pharmacists have a tendency to overestimate their patient counseling abilities when using a standardized rubric, compared to a faculty grader. Reliability did not improve upon re-assessment at a later time.

Emerging Topics

155-Community Pharmacy Activities and Perception of Success in a Value-Based Program. Andreski M, Drake University, Doucette W, Al-Khatib A, University of Iowa, Pudlo A, Iowa Pharmacy Association. Email: michael.andreski@drake.edu.

Objective: The objective of this study was to examine activities that pharmacies are using to affect performance metrics in a Value-Based Pharmacy Program (VBPP). As pharmacists transition to Pharmacist Patient Care Plan based practice, pharmacists are increasingly recognized as having a positive effect on medical outcomes. A large Midwestern-based insurer introduced a VBPP to pharmacies in two states in 2017. The objective of the insurer was to create a per capita bonus payment system for participating pharmacies who perform high quality patient healthcare processes and limit health care costs. The VBPP uses a set of 18 metrics to rate pharmacy performance on the domains of chronic disease management (e.g. asthma, diabetes) and cost and utilization (e.g. total cost of care).

Methods: A series of semi-structured interviews with pharmacists in 11 participating pharmacies resulted in compilation of a list of 30 activities being performed to improve scores on the VBPP performance metrics. A survey instrument was constructed that measured the frequency of performance of these activities on a Likert-type scale. Other items measured on Likert-type scales included prioritization of activities for 7 areas of VBPP focus and pharmacists' time availability to provide patient care services. Perception of level of success in the VBPP was measured on a continuous scale of 0 to 100. Respondents also provided qualitative information about patient care challenges and suggestions to increase performance and sustainability in the network. Surveys were mailed to a contact at each of the 73 participating pharmacies, with at least 2 reminders.

Results: Responses were received from 53 of the 73 pharmacies in the network (72.6%). The mean perception of level of success was 53.06 ± 20.15. Activities with the highest priority were adherence (1.98 ± 0.971) and diabetes care (2.04 ± 0.831) and the lowest was depression care (3.60 ± 1.098). On average, pharmacists rated their available time to provide patient care as "Good" (2.81 ± 1.19). The most frequently mentioned challenge was time availability and the most common improvement suggestion was better communication between the insurer and providers. The activities/issues most frequently performed were "Counsel (Insurer) patients to take their medications as directed to try to improve total cost of care" (4.17 ± 0.826), "Obtain a list of patients to target from corporate analyses of (Insurer) dashboard data" (4.13 ± 0.981), "Monitor medication adherence for (Insurer) patients, and intervene if non-adherent" (4.02 ± 0.796). The activities/issues least frequently performed were "Are informed about hospital discharges of your (Insurer) patients at the time of discharge" (2.15 ± 0.949), "Utilize a central fill service" (1.51 ± 1.067).

Conclusions/Implications: In summary, pharmacists feel that they are being moderately successful in the VBPP. While many pharmacists expressed concerns about time available to work on patient care services, overall they rated their patient care time availability as "Good". Pharmacists reported prioritizing adherence and diabetes care activities, which was reflected in the frequencies of performing those activities. Activities around depression care consistently were not prioritized nor were those activities performed as frequently as others.

156-The Quality of Qualitative Research Reporting in Community Pharmacy Research: Where are we? Aref H, Olufemi-Yusuf D, University of Alberta, Witry M, The University of Iowa, Guirguis L, Faculty of Pharmacy and Pharmaceutical sciences, University of Alberta. Email: haref@ualberta.ca.

Objective: Qualitative research approaches like interviews, focus groups, and observations have been used to evaluate as well as explore the expectations, perceptions, and challenges of community practice. Given their value, it is not surprising that the number of researchers and pharmacy journals conducting and publishing qualitative work has grown. Qualitative research, when reported rigorously, can provide unique insights into community pharmacy practice. Objective: To evaluate the reporting quality for a sample of qualitative research articles in pharmacy. Specific objectives are to characterize 1) adherence to the Standards of Reporting

Qualitative Research (SRQR) guidelines, 2) the use of theory and 3) the analysis approach (ie.e, descriptive or interpretive) for the sample of articles.

Methods: A systematic literature search was conducted using Ovid MEDLINE to identify original peer-reviewed articles in community pharmacy practice employing qualitative research. We excluded commentaries, letters, articles, and review papers. Two authors independently extracted and evaluated the research articles using definitions provided in the SRQR. The completeness of the information presented in eligible articles was coded as Complete (Yes), Partial or Incomplete (No). Descriptive statistics were used to characterize the yes/partial/no breakdown for each article and each SRQR reporting criteria.

Results: Eighty-three articles were retrieved through the database search (n=83) and after the abstract and full-text screening, 31 articles met study criteria and were selected. No study included all SRQR reporting elements. One article met 19 out of the 24 standards and 21 (39%) satisfied 15 or more standards. Over 90% of studies satisfied SRQR criteria around defining the problem and research questions (i.e., abstract, problem, purpose, context), ethical issues, data collection and data processing. This literature was least likely to satisfy the research approach (n=7,23%) or trustworthiness (n=10,32%) criteria for reporting. When looking at the analysis approach, 38% (n=12) of the studies satisfied the requirements while 61% (n=19) partially satisfied it. The majority of studies (n=19, 61%) did not integrate theory into any stage of their research process. Theory was implied or partially integrated into 9 (30%) studies, retrospectively applied in 3 (9%) studies, and no studies consistently integrated theory throughout the research process.

Conclusions: Pharmacy researchers need to consider, at the minimum, using established qualitative reporting standards when reporting their qualitative work. Using such standards in the design stage, to allow for full reporting, would likely further benefit sound methods and rigour. There is a need for a more consistent reporting of specific qualitative inquiry cornerstones such as approach, reflexivity, and trustworthiness. Reviewers could be encouraged to use the SRQR to promote thorough reporting in pharmacy journals.

157-Development of a Community Pharmacy Practice-Based Research Network Through Stakeholder Engagement. Carroll J, McGivney M, Li J, Coley K, University of Pittsburgh. Email: joni.carroll@pitt.edu.

Objective: The purpose of this research was to gather the opinions and preferences of pharmacist and patient stakeholders to inform the creation of a community pharmacy practice-based research network (PBRN). Every day community pharmacists provide care to people in the communities where they live. However, demonstrating the value of that care to both patients and the healthcare community can be challenging. One way to show the value that pharmacist-provided care can have on patient outcomes is through patient-centered outcomes research (PCOR). A community pharmacy PBRN can help organize and amplify PCOR conducted through community pharmacies and will provide patients and pharmacists access to research opportunities that are meaningful to them. This research is funded by a Eugene Washington Engagement Award from the Patient-Centered Outcomes Research Institute.

Methods: A stakeholder advisory board of pharmacists, patients, and researchers was established to guide this mixed-methods research. A three-part "listening tour" was conducted to inform the development of the community pharmacy PBRN. First, pharmacists across Pennsylvania were surveyed to learn their opinions on participating in PCOR through a community pharmacy PBRN. Next, pharmacists participating in a statewide practice network were purposefully sampled to participate in semi-structured, key-informant interviews to learn their opinions on PCOR and their preferences for engagement in the PBRN. Finally, focus groups were conducted in four geographic regions across Pennsylvania to learn patient opinions on participating in PCOR at their local community pharmacies. Descriptive statistics were used to analyze survey data. Interviews and focus groups were audio-recorded and transcribed verbatim. Transcripts were coded independently by two investigators using NVivo software. Coding discrepancies were resolved through discussion. The research team performed an inductive analysis of the coded transcripts to identify themes. Quantitative and qualitative findings were used to inform the development of the PBRN. This research was approved by the University's Institutional Review Board.

Results: Eighty-nine pharmacists (73 survey respondents; 16 interviewees) and 32 patients participated in the study. Pharmacists believed PCOR would benefit them by improving patient care and pharmacy workflow and demonstrate pharmacists' commitment to improving patient health. Pharmacists also believed PCOR would enhance the patient-pharmacist relationship, positively impact patient health, and demonstrate the value of pharmacist-provided patient care. Pharmacists felt students could assist with engaging patients in the research process. Most pharmacists preferred to engage patients face-to-face. Pharmacists cited they would like to share research ideas and successful research practices within the PBRN. Focus group patient participants reported they were interested in research relevant to their healthcare concerns/needs and they valued their pharmacists' input on the benefits of the research. Patients prefer one-on-one discussions with the pharmacist for research recruitment and scheduled appointments for research activities.

Conclusions/Implications: Gathering pharmacist and patient opinions on participating in research was an important step in developing a successful community pharmacy PBRN that meets stakeholder needs. These research methods served as an implementation strategy to create awareness of the PBRN formation across Pennsylvania. PCOR conducted in local communities through a community pharmacy PBRN can help transform patient care to improve patient-centered outcomes.

158-Creating a Fluorogenic Assay For Characterization and Functional Profiling of the Gut Microbiota. Chen A, Barrios A, University of Utah. Email: annwin.chen@pharm.utah.edu.

Objective: The objective of this study is to create a fluorogenic panel that can characterize the functional properties of the gut microbiota. The composition of bacteria is diverse, variable, and can have an impact on disease states. For example, a larger ratio of Firmicutes than Bacteroides has been linked to an increased risk of obesity. The gut flora can also have direct effects on the nutrients and therapeutic agents consumed by the host, known as pharmacomicrobiomics. Bacterial metabolism is primarily hydrolytic and reductive. For example, when irinotecan is metabolized in the gut that contributes to the dose-limiting gastrointestinal side effects. Studies have observed that taking the medication with a high fiber diet and broad-spectrum antibiotics alleviates this problem. As indicated above, it is essential to understand the molecular activities of the intestinal microbiota. Conventional research uses metagenomics like isolating 16s rRNA or sequencing individual strains of bacteria. Other studies create a simulated flora ecosystem and study different reactions from that product. However, characterizing individual strains or creating an artificial gut like environment is not trivial, be expensive, and time-consuming. The current metagenomic method is also restricted by how many strains have been genotyped. This study proposes creating a way to capture gut bacteria's functionality simultaneously by taking advantage of its enzymatic reactions.

Methods: Bacterial enzymes are responsible for the biological functions and xenobiotic transformations catalyzed by the gut microbiome. Thus, it would be beneficial to look at gut flora's bacterial enzymatic activity. Fluorogenic assays are often used to understand enzyme activity rapidly and inexpensively. The same concept will be applied to this study. We have assembled a panel of coumarin based substrates that will be used to identify the enzymatic activity of the bacterial samples. Coumarin based substrates are used because of their easy and fast readability when the reaction occurs. Through the series of different enzymatic reactions, the library of fluorogenic substrates will create a fingerprint for simple and complex microbiota samples.

Preliminary Results: According to current preliminary results, various samples of simple and complex bacteria can be distinguished from each other based on its set of reactions. Individual strains had a distinct set of reactions. Different patterns were also seen with the complex samples between diabetic and wild type mice.

Conclusion/Implication: Creating a more holistic functional profile for complex microbiota samples will be a pathway towards personalized medicine. The technology described here could be useful in diagnostic tests for disorders such as inflammatory bowel disease. The functional profiles could also lend insight into individual variations in drug metabolism based on the gut microbiota.

159-Transition of Care with Dalbavancin. Couch K, Conde N, Goods B, Nguyen T, Providence Holy Family Hospital. Email: katie.couch@wsu.edu.

Objective: This retrospective study aims to evaluate the use and cost-savings of dalbavancin while proposing a protocol to implement at our institution. Certain skin, soft tissues, and bone infections may require extended durations of intravenous antibiotic treatment. Not only is increased length of stay in the acute care setting a significant financial burden for the institutions, but also for patients who are otherwise healthy and ready to discharge. Dalbavancin is a long-acting lipoglycopeptide that is approved for adults with acute bacterial skin and skin structure infections caused by gram positive organisms, including methicillin-resistant strains, and allows for early discharge of patients who meet use criteria.

Methods: A report was ran in Epic Electronic Health Records for all patients who had received at least one dose of vancomycin between May 2018 and September 2018. Candidates for dalbavancin were then identified using prespecified inclusion and exclusion criteria. the inclusion criteria includes patients with acute bacterial skin and skin structure infections, bone and joint infections, gram positive infections, and patients 18 years and older. patients with endocarditis, pneumonia, and meningitis were excluded from the study, as well as those able to receive daily outpatient antibiotics. Demographic and patient specific data were collected including age, sex, history of intravenous drug use, cultures, sites of infection, and antibiotic treatment plan. This data was used to identify patients who would require inpatient intravenous antibiotics for the duration of their therapy. Cost savings was then calculated utilizing an estimated length of stay based on the planned antibiotic duration versus actual length of stay.

Preliminary/Final Results: A total of 475 UNIQUE vancomycin orders were identified and 21 patients met inclusion criteria to receive dalbavancin. Upon further review, 15 patients were excluded because no barriers to outpatient intravenous antibiotics were identified. Ultimately, 6 patients were eligible to receive dalbavancin. Out of the 6 patients, 5 patients were eventually discharged on dalbavancin and 1 patient was discharged on daptomycin. The inpatient non-ICU cost for one day at our institution is approximately $1,041. By discharging these 5 patients on dalbavancin, the total inpatient days saved was 104. Therefore, the estimated length of stay cost savings over the five month study period was $108,327.44. After subtracting the cost of dalbavancin and extrapolating over a 12-month period, our estimated net annual cost savings would be $222,858.96. The protocol is currently pending approval from management.

Conclusion: Utilizing dalbavancin for patients requiring prolonged intravenous antibiotics decreases overall costs for institutions. By implementing a protocol, institutions can further increase savings through early recognition of potential patients that meet criteria for dalbavancin.

160-Is the Prevalence of Medically Unsupervised Activated Charcoal use a Cause for Concern in Patients with Celiac Disease? Espinoza B, Zingale D, University of Arizona. Email: bespinoza@pharmacy.arizona.edu.

Objective: Celiac disease is an autoimmune disorder which causes an intolerance to gluten. Due to hidden sources, lack of clear

labeling, and cross contamination, it is not uncommon for people with celiac disease to inadvertently ingest gluten. Currently, the only treatment is a lifelong adherence of the gluten free diet and there are not any medications to treat celiac disease. It is important for pharmacists to be aware of this use of activated charcoal to provide patients with accurate recommendations. The purpose of this study is to identify the frequency of activated charcoal use in patients with celiac disease as a remedy despite the lack of literature on the safety and efficacy of the practice; and to describe where the recommendation for activated charcoal use as a treatment for acute gluten ingestion is originating from.

Methods: Using a descriptive study design, an online survey was sent to members of the celiac disease community via email and through Facebook celiac support groups for participants who were at least 18 years of age diagnosed with celiac disease, or the guardian of a child younger than 18 years of age with celiac disease. The survey was voluntary and anonymous. Participants were grouped based on method of diagnosis and whether they were using activated charcoal as a remedy for acute gluten intoxication. Resources participants utilized for treating acute gluten intoxication, amount of activated charcoal ingested and frequency, knowledge regarding spacing from other medications or vitamins, length of celiac disease diagnosis, and the effect activated charcoal had on the symptoms of gluten intoxication were also assessed. Chi-square was used to find association between activated charcoal use and non-physician references.

Results: Data collection in progress. Results will be published on the poster.

Conclusion: Data collection in progress. Results will be published on the poster.

161-Community Pharmacists' Work Activities, Challenges, and Solutions to the Provision of Patient-Centered Care in Nebraska. Facciolo F, Siracuse M, Galt K, Fuji K, Bramble J, Kaufman T, Creighton University. Email: ffa95015@creighton.edu.

Objective: The objective of this study was to explore the work activities of Nebraska community pharmacists within the context of the pharmacy profession's transition from a medication product focus to a patient-centered care focus. The patient-centered care philosophy supports a practice of pharmacy grounded on the provision of enhanced patient care services (e.g. hypertension management, diabetes management, etc.). Currently, challenges in community pharmacies limit enhanced services; thus, medication dispensing remains the activity which pharmacists are mostly involved. However, early innovator pharmacies are working to overcome challenges and integrate enhanced services into daily practice. Innovator community pharmacies in Nebraska may be members of the Nebraska Enhanced Services Pharmacies (NESP) Network. Pharmacies in this network document the value of their enhanced patient care services through a national database that links them with payers and other key stakeholders willing to support the provision and financial sustainability of these services. Exploring and describing work activities of traditional medication dispensing-focused pharmacies compared to enhanced services pharmacies is needed. These comparisons should identify how integration of patient-centered care services were attained, revealing solutions transferrable to other pharmacies with similar goals, and supporting the pharmacist's evolution toward patient-centered care.

Methods: This was an explanatory sequential mixed methods study consisting of a quantitative phase followed by a qualitative phase. Quantitative data were collected using a paper-based mail survey that included items on enhanced pharmacy services; pharmacists' attitudes and challenges toward enhanced services; and the planning, marketing and reimbursement mechanisms for the provision of enhanced services. The survey was distributed via U.S. mail to all pharmacists in charge of independent-owned community pharmacies in Nebraska. Quantitative data was analyzed in SPSS using descriptive and inferential statistics to describe differences between members and non-members of the NESP Network. Qualitative data was collected using an observation protocol designed and based on survey results. Purposive and convenience sampling was used to identify independent-owned community pharmacy sites based on pharmacy availability and willingness to participate in this qualitative phase and proximity to the researchers. Qualitative data was analyzed using techniques of open, axial, and selective coding to generate major themes and develop a theory to describe how pharmacists who incorporate enhanced services are accomplishing this. The themes and theory helped explain, confirm, and validate survey results.

Results: Research in progress.

Conclusions/Implications: Results may have implications for community pharmacy practice. The national focus on pharmacy enhanced care services is pushing community pharmacies to evolve and become health care sites ready to take advantage of emerging opportunities in patient-centered care and leverage business models that allow for reimbursement of these services. These findings will contribute to an understanding of pharmacists' competencies and practice functions needed to plan, market, and receive reimbursement for the provision of enhanced pharmacy services and define principles of business planning in patient-centered care.

162-Design and Implementation of Implicit Bias Training for School of Pharmacy Admissions Interviewers. Finley D, Butler L, Kerr J, Southern Illinois University-Edwardsville. Email: definle@siue.edu.

Objective: Unconscious biases are social stereotypes about certain groups of people that individuals form outside their own conscious awareness usually in a way considered to be inequitable. Biases can have negative or positive consequences and affect our interactions with others such as during interviews. The objective is to design and implement an interactive training to facilitate pharmacy school interviewers in addressing their biases and help them develop ways to overcome them in an effort to make the admissions process more equitable.

Methods: A literature review was conducted and key faculty experts were consulted to design a training video. The training is comprised of background information about the origins of implicit bias, definitions and examples of how implicit bias can manifest itself within an interview, discovery of one's bias through the Implicit Assessment Test (IAT) and recommendations to overcome implicit bias. All volunteer faculty, alumni and other pharmacists are requested to complete the required training prior to conducting interviews for the 2019-2020 academic year.

Preliminary Results: Southern Illinois University Edwardsville School of Pharmacy developed an online 15-minute implicit bias training video that is being sent out to all volunteer interviewers. Approximately 50 interviewers will be requested to complete the required training and complete an anonymous, electronic survey consisting of Likert-type and open-ended questions to assess the quality of the training.

Implications/Conclusions: Implementing implicit bias training during the college admissions process for pharmacy schools can help create equity amongst student candidates and cultivate diversity and inclusion. This type of training is a promising area for further research.

163-Drug information Requests as a Means to Identify Training Needs and Opportunities for the Active Provision of information: A Lexicographic Analysis. Frerichs J, Barker M, Salgado T, Virginia Commonwealth University, Mendes A, Universidade Federal do Parana, Musselman K, Bon Secours Mercy Health, Fernandez-Llimos F, Faculdade de Farmacia, Universidade de Lisboa. Email: frerichsjd@mymail.vcu.edu.

Objective: The aim of this study was to identify training needs and opportunities for active information provision based on a lexicographic analysis of the drug information requests received over two years. Pharmacists at Bon Secours Mercy Health (BSMH) in Virginia, provide several services in the primary care setting, including drug information to other health care professionals. Some of the drug information requests received are redundant and could be preemptively addressed with training and active provision of information.

Methods: Drug information requests received in 2016 and 2017 were independently classified by two authors (reconciled by a third) into one of the following: training, referring to the delivery of content that is meant to be retained as knowledge and used when needed; active information, consisting of delivering information beforehand in the means of resources that can be consulted when needed; or passive information, requests not addressable with training or active information. Inter-rater reliability was calculated using the Cohen's Kappa. To identify specific training and active information areas within each category, a lexicographic analysis was performed for a quantitative assessment of the number, frequency, and distribution of the words included in the description of the drug information requests. Before the analysis, all abbreviations and acronyms were removed and drug information requests were compiled into a single text corpus. Three different analysis were subsequently performed: 1) a lexicographic analysis to determine the number, frequency, and distribution of active (i.e., nouns, verbs, adjectives, and adverbs) and supplementary (i.e., prepositions, pronouns, articles, or numerals) words; 2) a descending hierarchical classification to categorize active words into similar lexical classes to form dendrograms; and 3) a correspondence analysis to create graphs to visualize the classes created from the descending hierarchical classification. Lexicographic analysis was conducted with IRAMuTeQ 0.7 alpha 2 (Interface R for Analyses of Multidimensional Texts and Questionnaires) software.

Results: A total of 2,041 drug information requests were classified with good inter-rater reliability (kappa=0.769), with 330 (16.2%) classified as training, 456 (22.3%) as active information, and 1255 (61.5%) as passive information. Lexicographic analysis identified 5 classes within the training category: 1) controlled substances, 2) prescription monitoring program, 3) vaccines, 4) patient assistance programs, and 5) continuing medical education. Within the active category, four classes were identified relating to: 1) medication disposal, 2) medical group policies, 3) vaccine schedules, and 4) medication storage and stability.

Implications/Conclusions: This analysis identified areas where training and active drug information may improve the efficiency of the drug information service at BSMH. The effectiveness of the lexicographic analysis was limited by the short and abbreviated way that the drug information requests were recorded, rather than using complete sentences. Future practice recommendations resulting from this work include: 1) providing training and creating resources for the recurrent areas identified, 2) centralizing the drug information service, and 3) keeping more complete documentation of the drug information requests.

164-The Impact of Pharmacist Work Conditions on the Provision of Patient Counseling and Advanced Practice Services. Hamrick J, Cunningham S, Mercer University. Email: hamrick_jw@mercer.edu.

Objective: The primary objective of this study is to determine the impact pharmacist work conditions has on the provision of patient counseling and advanced practice services (immunizations, medication therapy management (MTM), health screenings, etc.). The Enhancing Well-Being and Resilience Among the Pharmacist Workforce: A National Consensus Conference held in July 2019 made a list of recommendations related to the improvement of pharmacist work conditions and patient safety. In 2015, the Centers for Disease Control and Prevention (CDC) applauded the profession of pharmacy for improving vaccination rates and decreasing the risk of vaccine-preventable diseases. The CDC has also found data to show that MTM is effective at improving patient quality of life and medication adherence; improving safe and effective use of medications, and decreasing total medications prescribed thereby decreasing overall healthcare costs.

Methods: Investigators sent a 33-question survey was developed that asked questions of community pharmacists currently working in a southeastern state. The collected information on work conditions, including prescription volume, hours worked, availability of support staff, provision of counseling and other advanced practice services, and work environment. The online survey was emailed to all members of the state pharmacy association and posted on social media. Data was collected from July 3, 2019 to September 3, 2019. Questions were categorized into "Hours Worked" related (shift length, holidays worked, and weekends worked), "Support Staff" related (intern, technician, and clerk presence), "Breaks" related (meal breaks, sitting down, and restroom breaks). Respondent answers were compared against their answers to questions that directly related to provision of patient counseling, provision of advanced practice services (immunizations, MTM, health screenings, etc.), and overall patient safety. The data was examined using chi-square and odds ratio analysis.

Results: A total of 212 (24.7%) community pharmacists licensed in the state being studied completed the survey. Fifty-eight respondents (27.4%) who did not get a break for meals reported rarely or never offering counseling and advanced practice services as compared to nine respondents (4.25%) who did receive a meal break (P>=0.0001). Thirty-seven respondents (17.5%) who did not have support staff reported missing counseling opportunities versus seven respondents (3.3%) who did have support staff (P=0.005). One hundred and two respondents (48.1%) who rated their overall stress levels as high or very high reported not providing counseling or advanced practice services compared to eight respondents (3.77%) who rated their overall stress levels as low (P>=0.0001).

Conclusions: Results of this study indicate that poor work conditions and increased stress levels of pharmacists negatively impact the provision of patient counseling and other advanced practice services. This data should be considered by both local and national policy makers when creating rules and regulations that govern the practice of pharmacy to help safeguard pharmacist work-conditions and overall stress levels in efforts to improve the provision of services that positively impact patient outcomes and decrease healthcare costs.

166-An Evaluation of Antibiotic Prescribing Habits Over a Six-Year Period. Kovaly B, Fateye B, King A, Grand Valley State University. Email: fossbr@mail.gvsu.edu.

Objective: The primary objective of this study was to observe the antibiotic prescription rates in hospital, emergency and primary care facilities within a West Michigan health system over a 6-year period. The secondary objective of this study was to observe what proportion of total antibiotic prescriptions were associated with indications for which antibiotics are not required; specifically, those associated with viral infections. The third objective of this study was to observe the geographical distribution of antibiotic prescription rates.

Methods: Observational study of patients who received one or more antibiotics. Main outcome measures: overall rates of antibiotics prescribed, rates of potentially inappropriate prescribing for respiratory tract infections, rates for the most frequently prescribed antibiotic classes by mechanism of action and rates of antibiotic prescriptions associated with counties in West Michigan.

Results: Approximately three quarters of a million antibiotic prescriptions were made by the health system from 2013 to 2018 with a 16.9% increase in 2018 over baseline. The most prescribed individual antibiotic was amoxicillin (with and without clavulanate), followed by azithromycin and cefazolin. The largest increase between baseline and 2018 was seen in cefazolin, amoxicillin/clavulanate and cephalexin (4.16%, 1.96% and 1.41%, respectively). The largest decrease was seen with macrolides -both levofloxacin and ciprofloxacin decreased by 4.7% and 2.4%, respectively. The majority of inappropriate antibiotic prescriptions were for acute bronchitis, particularly from outpatient facilities. Azithromycin was the most prescribed antibiotic for potentially inappropriate indications and the percentage of azithromycin used increased progressively until 2017. Overall, the proportion of inappropriate antibiotic prescription fell slightly over the study period. Most patients belonged to the same county as the health system being studied, however some surrounding counties showed antibiotic prescription rates that were disproportionate to their population.

Conclusions: Prescription rates progressively increased over the study period. Inappropriate prescriptions are significantly more likely to originate from outpatient facilities. The proportion of potentially inappropriate prescriptions decreased over the study period. The use of azithromycin increased over this period despite high resistance rates while fluoroquinolones decreased.

167-Analysis of Community Pharmacist's Knowledge, Attitudes, Beliefs, and Practices about Cannabidiol (CBD) Products. Lee K, University of Southern California. Email: kflee@usc.edu.

Objective: The objective of this study is to determine community pharmacists' knowledge, attitudes, beliefs, and practices about cannabidiol (CBD) products, which are distinct from marijuana or tetrahydrocannabinol (THC) products. CBD and THC are a cannabinoids derived from the Cannabis sativa plant but, unlike THC, CBD is non-psychoactive. Recently, many states, including California, have legalized the medicinal and/or recreational use of marijuana despite its federal classification as a Schedule I drug. The 2018 United States Farm Bill de-scheduled hemp and distinguished hemp and marijuana. Hemp contains primarily CBD with less than 0.3% of THC, while marijuana exceeds 0.3% of THC. Due to its non-psychoactive component, hemp or CBD products can possibly provide the health benefits of marijuana without the high associated with THC. However, the FDA continues to classify CBD and hemp as Schedule I substances. The California Department of Public Health (CDPH) hasn't approved CBD oil derived from industrial hemp for human and animal consumption as food, as food ingredients, food additives, and dietary supplements. Conflicting opinions from federal and state regulations/agencies have created grey area regarding the legality of CBD products; which may dissuade healthcare professionals, like pharmacists from selling and/or counseling patients on CBD. Major pharmacy chains have started carrying CBD

products in many states, including in California. Consumers are actively seeking CBD products to manage conditions like pain or anxiety, but there is limited preclinical evidence about cannabinoid product efficacy. There are limited studies on pharmacist perceptions of marijuana and its derived products. A 2017 study surveyed California Pharmacists about their knowledge and attitudes towards medical marijuana. The results indicated that pharmacists believed that marijuana had medical efficacy, but they lacked adequate knowledge about it. This study and others found in a literature search focused on medical marijuana, but attitudes specifically about CBD products have yet to be studied. To the author's knowledge, this is the first survey to examine pharmacist's perspectives on CBD products.

Methods: An anonymous electronic questionnaire will be created and emailed using a commercial software system to California pharmacists through the list serve from the California Pharmacists Association, with at least 500 pharmacists surveyed. The survey will be administered from December 2019 to March 2020 and consist of questions to collect information on respondent and practice site demographics; additionally, it will utilize a Likert scale to measure and assess several factors, such as, but not limited to, the knowledge of the safety and efficacy of CBD, comfort selling and recommending CBD, preparedness to counsel patients, and the value of pharmacists' role with CBD. Additional reminders will be sent every 2 weeks to non-responders, with a goal of 80% response rate. Results will be analyzed using descriptive statistics.

Results: To be determined.

Implications: Assess pharmacist's perspectives on CBD products and determine if CBD products belong in the pharmacy. Identify education opportunities for pharmacists and which practice settings are most ready to counsel on CBD use.

168-Community Pharmacy Dispensing Patterns of Naloxone After Implementation of a Clinical Queue Intervention Program. Melendez D, South College.Email: dmelendez@south.edu.

Objective: The objective of this study is to compare the number of naloxone prescriptions dispensed before and after the implementation of a clinical queue intervention program which identifies patients at high-risk of opioid related overdose. Opioid related overdose and death rates are increasing nationwide. Naloxone, an opioid antagonist, reverses the effects of opioids during an overdose which can be lifesaving. The Centers for Disease Control and Prevention (CDC) recommends that patients who are prescribed a total opioid dose greater than or equal to 50 morphine milligram equivalents per day (≥50 MME/day) or patients who are taking an opioid and benzodiazepine concurrently should be prescribed naloxone. A clinical queue intervention is an automated computer program that identifies such patients and generates an alert to community pharmacists to provide education about opioid overdose and naloxone.

Methods: This study has been submitted to an Institutional Review Board for approval. When a clinical queue intervention program is implemented into a pharmacy computer system, the program will identify patients who are at high risk of opioid related overdose (≥50 MME/day or concurrently taking at least one opioid and a benzodiazepine). Once patients are identified, pharmacists will receive an alert on the computer screen prompting them to provide patient education about opioid related overdose and naloxone drug information. All pharmacists who participate in this study are naloxone trained and will abide by the Tennessee statewide opioid antagonist collaborative pharmacy practice agreement. This study will be a pre-post observational study conducted using electronic data collected from five community pharmacies in Knox county in Tennessee. To evaluate the dispensing rates of naloxone, medication profiles of these identified patients will be assessed from November 1, 2019 to February 28, 2020. This data will be compared to previous data available for naloxone dispensing rates at the participating community pharmacies in the 2018 calendar year. All data will be de-identified and only accessible to the primary investigator.

Results: Research in Progress.

Conclusion: Research in Progress.

169-Primary Care Transformation: Primary Care Pharmacist Services Modeling Tool. Mulrooney M, Smith M, University of Connecticut. Email: mary.mulrooney@uconn.edu.

Objective: The objectives are to: (1) describe the development of a pharmacist services modeling tool (PCImpact) to determine a pharmacist's workload capacity and value/impact in primary care and (2) utilize PCImpact with three primary care organizations' inputs to validate the tool. The role of the pharmacist in primary care is evolving as healthcare payment moves towards value-driven care. However, a challenge remains to identify the optimal use of the pharmacist in primary care initiatives to maximize quality, cost performance, and provider "joy of practice". This tool can be used to forecast the impact for different pharmacist services on: (1) pharmacist workload capacity, (2) number of patients served, and (3) primary care provider (PCP) clinical workload.

Methods: Four general pharmacist service models have been built. These four models are broken into two direct patient care models:(a) Pharmacist & PCP Co-visit; (b) Embedded Pharmacist with Collaborative Practice Agreement (CPA)], and two population health models: (a) Targeted Medication Reviews; (b) Comprehensive Medication Reviews. For each pharmacist service model, the following components are described: (a) clinical activities being performed with a description of each workflow step, (b) type of patient (new vs. follow-up), (c) targeted vs. comprehensive service, (d) frequency of pharmacist interaction (one-time vs. longitudinal),

and (e) extent of patient contact needed. PCImpact accounts for: pharmacist time required for service, PCP time required with and without the pharmacist service, the service-specific implementation rate of pharmacist intervention by the PCPs, and the pharmacist FTE devoted to the service. PCImpact will be tested and validated in three provider organizations in Connecticut. Site-specific data from various pharmacist services/models will be used to forecast impact using PCImpact. Workflows will be designed and times will be captured for each workflow step. The effect on PCP time with the pharmacist intervention will be captured (additional time required or saved per each PCP workflow step). Data collection to validate PCImpact will be complete by December 31st, 2019. Preliminary

Results The results will include (1) a validated tool/framework to forecast varying pharmacist service models and their effect on: pharmacist workload capacity, quantity of impacted patients, and PCP time, and (2) data and calculated outputs from three provider organizations. Preliminary data trends: (1) population health models have lower patient impact and higher PCP clinical workload burden, and (2) the embedded pharmacist with a CPA model has the highest patient impact and the most reduction in PCP workload.

Conclusions/Implications -The closer the pharmacist service model is to the point-of-prescribing, and involves direct patient care for comprehensive medication management, the higher the reduction on PCP clinical burden and greater the number of patients impacted by the pharmacist. -PCImpact can be utilized to engage pharmacy, clinical, administrative, and financial leaders in discussions to optimize clinical pharmacist services within primary care initiatives. -PCImpact can be applied as a decision-making tool to initiate, optimize, or expand pharmacist services in organizations with value-based payment contracts. -Can be adapted to other care delivery settings such as ambulatory clinics, integrated care networks, and accountable care organizations.

170-Assessment of Interprofessional Collaboration Using the Interprofessional Education Collaborative's Sub-Competencies. O'Brocta R, Fusco N, SUNY at Buffalo, Lindenau R, Panthapattu M, Foster A, Middleport Family Health Center. Email: robrocta@buffalo.edu.

Objective: Patients want their health care provider to deliver culturally appropriate care as it leads to greater satisfaction and improved health. The University of Cincinnati (UC) Academic Health Center (AHC) Colleges of Allied Health Sciences, Medicine, Nursing and Pharmacy are committed to educating students to deliver culturally appropriate care. Graduating culturally competent practitioners who have the skills to meet the needs of patients can ultimately improve the health of the community and decreases health disparities in vulnerable populations. Our objective was to evaluate the cultural competency in the curriculum of the AHC Colleges. Evaluating cultural competency in a curriculum is not an easy task. As an AHC, we have used multiple ways to evaluate the cultural competence of our curriculum including an e-curriculum cultural competency review, inter-professional educational assessments and a self-reported survey.

Methods: Over the past three years, we surveyed our students using the validated Cultural Awareness Survey (CAS). The CAS tool evaluates each students' self-reported experiences, awareness and attitudes, and classes/experiential training on cultural awareness in the categories of: classroom and clinical instruction, cognitive awareness, research issues, behaviors/comfort with interactions, and clinical practice. A scale of 1 to 7 (1-strongly disagree to 7=strongly agree) is used. In addition, we also collected qualitative data about how students perceive their own cultural competence and how the academic institution is preparing them to be culturally competent.

Results: The College of Pharmacy's (COP) mean each year was compared to the collective mean of the other three colleges. All colleges in 2017 had an increase when compared to 2016 in the behaviors/comfort with interactions except for the COP which declined. However, in 2018 the mean was lower for all colleges in this category versus 2017. This study did not find significant differences among the AHC Colleges when evaluating data among the colleges. The largest increase from 4.34 (2017) to 5.94 (2018) was the College of Nursing (CON) in cognitive awareness. CON also had the greatest decrease from 5.61 (2017) to 3.97 (2018) in behaviors/comfort with interactions. Qualitative data from COP students revealed the following comments… "I think I definitely have room to improve my cultural competence, starting with increasing my awareness that cultural differences may influence the decisions people make pertaining to their healthcare" and "We don't have a whole lot in our curriculum in regards to cultural competence …" .

Implications/Conclusion: This was a great opportunity to do an evaluation of our curriculum. The qualitative data resulted in the following changes at the COP: "The Voice", a platform for students to ask questions; recognize others; and report unfavorable behavior; Curriculum updates using the Pharmacists' Patient Care Process and other resources to integrate health disparities and cultural competence into the curriculum; a mandatory diversity statement added to the syllabus of all classes; and the development of an inter-professional education course within our AHC. The goal is for the faculty to embed diversity into their classroom, case studies, and research so that students are well equipped to practice diversity and inclusion as health care practitioners.

170-Evaluating the Cultural Competency in the Curriculum. Achoe P, Mentzel T, MacKinnon N, University of Cincinnati. Email: pat.achoe@kroger.com.

Objective: Patients want their health care provider to deliver culturally appropriate care as it leads to greater satisfaction and improved health. The University of Cincinnati (UC) Academic Health Center (AHC) Colleges of Allied Health Sciences, Medicine, Nursing and Pharmacy are committed to educating students to deliver culturally appropriate care. Graduating culturally competent practitioners who have the skills to meet the needs of patients can ultimately improve the health of the community and decreases health disparities in vulnerable populations. Our objective was to evaluate the cultural competency in the curriculum of the AHC Colleges. Evaluating cultural competency in a curriculum is not an easy task. As an AHC, we have used multiple ways to evaluate the cultural competence of our curriculum including an e-curriculum cultural competency review, inter-professional educational

assessments and a self-reported survey.

Methods: Over the past three years, we surveyed our students using the validated Cultural Awareness Survey (CAS). The CAS tool evaluates each students' self-reported experiences, awareness and attitudes, and classes/experiential training on cultural awareness in the categories of: classroom and clinical instruction, cognitive awareness, research issues, behaviors/comfort with interactions, and clinical practice. A scale of 1 to 7 (1-strongly disagree to 7=strongly agree) is used. In addition, we also collected qualitative data about how students perceive their own cultural competence and how the academic institution is preparing them to be culturally competent.

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Implications/Conclusion:This was a great opportunity to do an evaluation of our curriculum. The qualitative data resulted in the following changes at the COP: "The Voice", a platform for students to ask questions; recognize others; and report unfavorable behavior; Curriculum updates using the Pharmacists' Patient Care Process and other resources to integrate health disparities and cultural competence into the curriculum; a mandatory diversity statement added to the syllabus of all classes; and the development of an inter-professional education course within our AHC. The goal is for the faculty to embed diversity into their classroom, case studies, and research so that students are well equipped to practice diversity and inclusion as health care practitioners.

172-Room Temperature and Refrigerated Stability of Angiotensin II at Clinically Relevant Concentrations. Price A, Amoussou K, Gorman G, Bui L, Samford University. Email: aprice6@samford.edu.

Objective: The objective of this research is to determine the stability profile of angiotensin II at clinical concentrations under two storage conditions: room temperature and refrigeration for nine days. Commercially available angiotensin II is a synthetic human hormone used to increase blood pressure in adults with vasodilatory shock. Manufacturer's labeling requires that angiotensin II reconstituted solution must be discarded after 24 hours at room temperature or under refrigeration. However, limited data related to the stability of angiotensin II solutions is available in clinical practice.

Methods: A high performance liquid chromatography (HPLC) stability indicating assay was used to determine the stability of angiotensin II. Due product availability, laboratory-grade angiotensin II was used instead of Food and Drug Administration (FDA)-approved angiotensin II product Giapreza). The method was shown to be stability indicating based on its ability to separate degradants from the parent compound. A forced degradation study was conducted to generate degraded samples of angiotensin II. Angiotensin II acetate (30 µg/mL in distilled water) was exposed to various stressors to induce degradation: acidic (5M hydrochloric acid), alkaline (5M sodium hydroxide), oxidative (10% hydrogen peroxide), and hydrolytic conditions all under elevated temperatures. Angiotensin II acetate bulk powder (1 mg) plus mannitol (10 mg) were mixed with distilled water (1 mL) to yield angiotensin II solution with a concentration of 1 mg/ml. Clinical concentrations (5,000 ng/mL and 10,000 ng/mL in normal saline, pH=5) were prepared from the 1 mg/mL solution and stored at either room temperature (68-77°F, 20-25°C) or refrigeration (36-46°F, 2-8°C). Samples from both storage conditions were tested for stability at 8-hour intervals for the first 72 hours, then every 12 hours for the next 48 hours, and then every 24 hours for a total period of 216 hours (9 days). The stability of each sample was determined by measuring the concentration of angiotensin II at each time point and comparing it to the concentration measured at time 0. The solution was considered unstable when less than 90% of the initial concentration of angiotensin II (time 0) was remaining.

Results: In the forced degradation studies, angiotensin II was observed to be least stable under alkaline and oxidative conditions. No degradation was noted under acidic conditions or in water. During stability testing, angiotensin II retained greater than 90% of its potency for at least 216 hours (9 days) at clinical concentrations of 5,000 ng/mL and 10,000 ng/mL at room temperature (68-77°F, 20-25°C) or at refrigerated conditions (36-46°F, 2-8°C). All measurements were within allowed variability (±10%) of the stability analytical method.

Conclusions/Implications: The HPLC method used in this study was shown to be stability indicating based on its ability to separate degradants from the parent compound. Angiotensin II in normal saline at concentrations of 5,000 ng/ml and 10,000 ng/ml is chemically stable for at least 216 hours (9 days). Future studies with this methodology may investigate commercially available angiotensin II drug products to evaluate a beyond-use date of the reconstituted product.

173-Microwave-Assisted Synthesis of Novel Norethindrone Derivatives Through Click Chemistry. Reid N, Dudley R, University of Findlay. Email: reidn@findlay.edu.

Objective: It is estimated that over 174,000 new cases of prostate cancer will be diagnosed this calendar year (2019) representing upwards of 20% of newly diagnosed cancer cases in men.1 Despite these numbers, prostate cancer related deaths have significantly declined over the period of time from 1993 to 2016 yet prostate cancer is expected to be responsible for almost 10% of cancer related

deaths in 2018.1 Progressive disease and death secondary to cancer cell resistance and treatment failure remains a significant concern in the care of men with prostate cancer.

Methods: To address the need for novel agents for the treatment of resistant prostate cancer we have designed and begun the synthesis of a small library (6 derivatives) of norethindrone-related molecules with varying substituents attached to the 17-position with the intention of antagonizing the androgen receptor. Our synthesis proceeded through one-pot microwave-assisted Click Chemistry to afford a triazole ring as a linker between norethindrone and hydrophobic and hydrophilic substituents. Preliminary

Results: Numerous derivatives have been designed and six have been selected based on functionality and availability of starting materials. The initial derivative, which involved the formation of a lipophilic norethindrone derivative with considerable bulk substituted at the 17-position, was synthesized under microwave radiation in 10 minutes and mass spectral analysis suggests product formation. It is anticipated that the subsequent derivatives will be synthesized in a similar manner and purified for cell culture-based assays.

Implications/Conclusions: The identification of novel compounds which display activity against prostate cancer cells represents a significant societal need, in particular in the castration-resistant prostate cancer population. The proposed derivatives are anticipated to elicit an anti-proliferative effect in cell culture and may provide insight into the effects of subtle modifications of a known progestin. Recently, progesterone receptors have been implicated in prostate cancer cell progression and antagonism of such receptors with novel derivatives may help to identify novel treatment strategies.

174-Implementation of a Community Pharmacy Practice Transformation Pilot in Northeast Tennessee. Robinson J, University of North Carolina, McDonough R, Towncrest Pharmacy, Clifton C, CPESN USA, Wagers R, CPESN-NET. Email: robinson_jm@outlook.com.

Objective: Community pharmacies have traditionally operated in a product-driven business model. Demand for value-based, person-centered care has increased opportunities for community pharmacists to provide clinical services as members of the interdisciplinary care team. In order to provide effective care, pharmacy activities and workflow must be optimized to incorporate new services and effectively communicate information with other members of the care team. A model for community pharmacy practice transformation training is needed. The purpose of this project is to identify key roles and provide training and resources to support practice transformation in the community pharmacy setting.

Methods: A team of content experts identified the core components of community pharmacy practice transformation and used the Evidence-Based System for Innovation Support Logic Model to develop training and technical support roles, baseline pharmacy assessments, training curriculum, resources, and performance metrics. The training program was piloted in community pharmacies located within the Northeast Tennessee Community Pharmacy Enhanced Services Network (CPESN-NET®). Eligible pharmacies were participating in a clinically integrated, network-wide, collaborative practice agreement (CPA) with a regional accountable care organization (ACO). The Pharmacist eCare Plan Standard within each of the participating pharmacy's software was utilized for submission of patient care plans, which was shared with CPESN® USA for quality assurance and quality improvement purposes (QA/QI). This project was funded by the Community Pharmacy Foundation (CPF) and received in-kind support from CPESN® USA and CPESN-NET®.

Final Results: Training was piloted in 15 CPESN-NET® community pharmacies in June-July 2019. The practice transformation team was comprised of a content expert, coach, coaching manager, technology vendor liaison, QA/QI coordinator, and CPESN-NET® lead network facilitator. Pharmacy baseline assessments included self-assessment and onsite assessments with a coach/content expert. An accelerated nine-week training curriculum included eight webinars and an implementation guide. Resources to support clinical activities included forms for documenting new patient intake, adherence improvement plans, pharmacist interventions, prescriber communication, and release of medical information. Six disease state management guidance documents were developed to support clinical activities related to pharmacist responsibilities within the ACO CPA. Additional resources included guides for accessing clinical guidelines, point-of-care testing registration, and implementation of the appointment-based model. Support included three onsite visits per pharmacy with a coach or content expert, weekly coaching calls, and access to technology vendor training. By July 2019, rates of eCare plan submissions increased by 711% and identification of medication-related problems increased by 2,666%.

Conclusions/Implications: The results of this project provide guidance on the emerging topic of community pharmacy practice transformation. By engaging a diverse team of experts, a comprehensive training curriculum was developed and implemented with success. The results of this project will inform future practice transformation efforts and align with initiatives such as Flip the Pharmacy, a national partnership between CPF and CPESN® USA to provide practice transformation training in 5000 pharmacies by year 2024 (CPF June 2019).

175-Enhancing Tumor Selectivity of 6-Mercaptopurine Using a Reactive Oxygen Species-Activated Prodrug Approach. Sistani-Khanaman F, Ai Y, Shapiro P, Martinez R, Xue F, University of Maryland. Email: fsistani@umaryland.edu.

Objective: Background/Objectives: The drug 6-mercaptopurine (6MP) is an antimetabolite that is used as an anticancer drug. It inhibits de novo purine synthesis and acts as an antiproliferative agent by interfering with protein, DNA and RNA synthesis and promoting apoptosis. Despite its proven efficacy, a high incidence of toxic effects in patients during standard-dose therapy is recorded. Reactive oxygen species (ROS), the metabolic byproducts of oxygen metabolism, play an important role in maintaining

cellular redox homeostasis. Unlike the normal cell environment where the ROS level is controlled by balancing its production and elimination, cancer cells exhibit enhanced levels of ROS. Novel 6MP prodrugs, in this study, contain ROS-reactive group in their structure which enhances their cytotoxicity activity. Furthermore, three-dimensional cell culture models, such as spheroids, can be used in the process of the development of new anticancer agents because they reproduce most of the features exhibited by in vivo human solid tumors and, consequently, their resistance to therapeutics. The aim of this study was to design new prodrugs of 6MP that selectively kill cancer cells and to evaluate their potency compared to the parent 6MP. Methods: Two novel 6MP prodrugs YA6131 and YA6075 have been synthesized via a three-step route in good yields. Melanoma A375 cells containing BRaf V600E mutation were grown in T75 and were seeded at 400 cells in 100 µL of DMEM plus FBS per well in an ultra-low attachment round bottom 96 well plate. Spheroids were incubated at 37 °C for 24 h and then treated with 6MP, and the prodrugs using various doses (0-25 uM25). Compound BVD523, an ERK1/2 pathway inhibitor, was used as a positive control. The consumption of ATP was measured by cell titer-GIo luminescent cell viability assay as an indicator of metabolically active and viable cells in this study. Preliminary/Final Results: The prodrug YA6131 inhibits A375 cell viability in a dose-dependent manner with a comparable potency as the parent 6MP drug (YA6131 IC50 = 3.7 µM vs. 6MP IC50= 1.0 µM). However, the prodrug YA6075 (IC50 >100 µM) was significantly less potent at inhibiting A375 cells. Conclusions/Implications: In conclusion, we have designed, synthesized, and evaluated novel 6MP prodrugs YA6131 and YA6075. These prodrugs are activated by high levels of ROS in cancer cells. The result of this study suggests that these ROS-activated prodrugs offer an effective way to improve selectivity and therapeutic effectiveness of anticancer drug 6MP. Future implication is to test these prodrugs on more relevant clinical cell lines. ----------Title: Evaluating the potency of 6-mercaptopurine prodrugs using a spheroid 3D cell culture model Background/Objectives: 6-Mercaptopurine (6MP) is an antimetabolite drug. Despite its proven anti-cancer efficacy especially for leukemia, a high incidence of toxic effects in patients during standard-dose therapy is recorded. Reactive oxygen species (ROS) play an important role in maintaining cellular redox homeostasis and unlike the normal cells, cancer cells exhibit enhanced levels of ROS. In this study, we tested two 6MP prodrugs that contain arylboronate groups as ROS-sensitive triggers, in a spheroid 3D cell culture model. Spheroids have the advantage of reproducing many features of human solid tumors, namely their structural organization, cellular layered assembling, hypoxia, nutrient gradients and, consequently, their resistance to therapeutics. Methods: Two novel 6MP prodrugs YA6131 and YA6075 have been synthesized in good yields. Melanoma A375 cells containing the BRaf V600E mutation were seeded at 400 cells/well in DMEM plus FBS per well in an ultra-low attachment round bottom 96 well plates. After 24 hrs, cells were treated with 6MP, and the prodrugs using various doses (0-25 µM) and spheroids were allowed to develop for six days. The ERK1/2 pathway inhibitor, BVD523, was used as a positive control. The consumption of ATP was measured by cell titer-GIo luminescent cell viability assay (Promega) as an indicator of metabolically active and viable cells. Preliminary/Final Results: The prodrug YA6131 inhibits A375 spheroid viability in a dose-dependent manner with a comparable potency as the parent 6MP drug (YA6131 IC50 = 3.7 µM vs. 6MP IC50= 1.0 µM). However, the prodrug YA6075 (IC50 >25 µM) was significantly less potent at inhibiting A375 cells, which might due to the insufficient release of the parent 6MP from the prodrug. Conclusions/Implications: In conclusion, we have evaluated the anti-cancer effects of two novel 6MP prodrugs YA6131 and YA6075 using a spheroid 3D cell culture model. The prodrugs were designed to sense high levels of ROS in cancer cells and release the parent 6MP. Our results indicated that prodrug YA6131 demonstrated comparable potency to the parent 6MP while the other prodrug YA6075 didn't show a significant anti-cancer effect. Further evaluation of these new compounds, including 6MP release kinetics, cancer vs normal cell selectivity, and in vivo efficacy are undergoing. Future studies will test these prodrugs on more relevant clinical cell lines.

176-Evaluation of Patient and Provider Satisfaction of a Pharmacist Providing Care in the Home. Stroedecke N, Yang M, Sherod-Harris T, Stewart A, Zimmer R, Clark D, Wake Forest Baptist Health. Email: nstroede@wakehealth.edu.

Objective: The primary objective of this study is to assess patient and provider satisfaction after the addition of a pharmacy resident to their Home Based Primary Care (HBPC) team. There is limited research available analyzing patient and provider satisfaction after a pharmacist is added to the healthcare team. Due to healthcare shifting to a value-based care model, satisfaction remains an area of focus to demonstrate optimum care. One of the ways that satisfaction can be improved is through medication related interventions.

Methods: This is a single center, pre/post, descriptive study that will include patients enrolled in HBPC at Wake Forest Baptist Health (WFBH). The purpose of the study is to assess patient and provider satisfaction after the addition of a pharmacy resident to their HBPC team. Patients will be identified as medium or high risk based on a screening tool that was created in 2018 and is currently being used to stratify patients. Patients will be included in the study if they qualify as medium or high risk patients and completed a HBPC visit with a pharmacy resident between July 1, 2019-February 1, 2020. Satisfaction of HBPC providers will be assessed if they saw the patient along with the pharmacy resident. Community-based pharmacy residents will be providing standardized patient care by having medium and high risk patients assigned to them as part of a longitudinal residency rotation. To ensure that standardized care is being provided by all pharmacy residents, an algorithm will be distributed to show the proper way to approach the patient and how to document medication related interventions. A documentation tool will be available in the electronic medical record for all residents to use after a HBPC visit. This tool will include the amount of time spent preparing before going on a visit, the amount of time spent in the home with the patient, and the medication interventions that were made. The medication interventions will be placed into one of three categories: medication access/availability, pharmacotherapy management, and medication adherence. After a home visit with a pharmacy resident, patients and providers will be given satisfaction surveys to complete. The survey will be given to the patient in a sealed envelope at the end of the visit and will have a prepaid envelope to send back to the HBPC team. Within two weeks of a visit, a

survey will be emailed to the provider to be completed and emailed back. All surveys returned by February 1, 2020 will be used for data analysis.

Results: Research in progress.

Implications/Conclusions: This research will provide insight on a pharmacist's impact on patient satisfaction in a nontraditional setting. The findings could be applicable to any organization that provides HBPC. This study will also address provider satisfaction, which is largely unstudied and critical to improve in a value-based care setting.

177-Assessment of Pharmacy Students' Knowledge and Perceptions of E-Cigarettes. Terrell J, Miller V, University of Louisiana-Monroe. Email: terrell@ulm.edu.

Objective: The primary objective of this study is to assess the knowledge and perceptions of different smoking products by pharmacy students. Vaping and "JUULing" are becoming a growing public concern, especially with youth and teens. Pharmacists are at the forefront to combat any kind of smoking and to also aid in smoking cessation. There is currently no direct pharmacy school lecture period to discuss e-cigarettes, including marketing strategies of JUUL and their possible use in cessation of smoking traditional cigarettes. It is unknown if pharmacy students are aware of the differences in smoking products and the possible help or harm that they may cause patients in the future.

Methods: After approval from the institutional review board, an electronic survey using EsurveysPro was emailed to all students currently enrolled in the College of Pharmacy. Pharmacy students were included if they were greater than 18 years of age and were excluded if they were unable to provide consent. The survey was voluntary and anonymous, and students provided informed consent prior to beginning the survey. The survey consisted of 23 questions that were assessed using a Likert scale ranging from Strongly Disagree to Strongly Agree. Questions addressed knowledge of smoking products and personal beliefs regarding their use. Students will be given one month with two reminders to complete the survey. Data analysis will begin when all submissions are final or the one month time frame is over, whichever comes first.

Results (or Preliminary Results): Eighty-eight students started the online survey, and seventy-five have completed it at this time. We are awaiting the results of approximately 200 more students to include in our analyses. Descriptive statistics are being utilized at this time. Preliminary results indicate that 37.3% of respondents believe that any form of e-cigarette is better than a traditional cigarette, and 48% of participants do not believe that e-cigarettes can be used in smoking cessation. One-fifth of students that responded believe that it is legal for a minor under 18 years old to buy an e-cigarette. Most students were aware that a JUUL is a type of e-cigarette and believe that there may be long-term harmful effects from its use.

Implications/Conclusions: Although complete results are pending, it is apparent that there is a gap in knowledge between pharmacy students and e-cigarette products. Pharmacists often lead the charge in "traditional" smoking cessation, and our students need to be informed of evidence-based decisions regarding e-cigarettes. This is a small sample at a college of pharmacy. Curricular revisions are likely, and we plan to expand the survey to other colleges of pharmacy and other health-profession schools to help identify ways to best bridge the knowledge gap.

178-Comparison of Efficiency and Workflow Time Requirements for Completion of Pharmacist eCare Plans. Tolar C, University of Wisconsin: ctolar@wisc.edu.

Objective: The primary objective of this project is to compare differences in the efficiency and time requirements of Pharmacist eCare Plans. Background: Documentation efforts of pharmacist's interventions in the community pharmacy setting is increasing due to the goals of the Community Pharmacy Enhanced Services Network (CPESN). To meet these goals, community pharmacies must document patient encounters as Pharmacist eCare Plans. Little is known at this time regarding the impact on workflow and time requirements associated with documentation of eCare Plans.

Methods: This is an observational study to compare efficiency and time requirements associated with documenting comprehensive medication reviews (CMRs) utilizing eCare Plan software. Participants will be observed documenting eCare plans that will take place at community pharmacy residency sites affiliated with the University of Wisconsin. Community pharmacy residents affiliated with the University of Wisconsin will video record themselves entering a CMR using their eCare Plan software while dictating each step of the documentation process. The primary outcome of this study is to compare workflow efficiencies, time requirements, and automation between eCare plans. Time requirements will be measured by key data entry categories utilizing time stamps from video recordings. Workflow efficiency will be measured by number of steps manually entered and information that is hand filled by the pharmacy resident. Data collection will begin in the Fall of 2019 after IRB approval and completed by March 1, 2020. A data collection template will be used during the analysis of video recordings. All data will be stored on a secure electronic database. No patient information will be obtained for this research project. Data will include time, number of manual steps, number of automated steps per key category, and descriptive statistics will be used. This project is considered research pending approval by the UW-Madison Institutional Review Board.

Results: Results in progress.

Implications: Pharmacist eCare Plans are required by pharmacies affiliated with the CPESN USA network. Understanding workflow

requirements and pharmacy documentation software will benefit CPESN affiliated pharmacies. It is anticipated that the results of this study will improve community pharmacy practice by identifying barriers and addressing software limitations that will refine documentation efficiency, and improve eCare Plan documentation workflow.

179-Use of Patient Assessment Skills in Advanced Pharmacy Practice Experiences. Wash A, Wong B, Moczygemba L, Lawson K, Karboski J, University of Texas at Austin, Kumaraswamy N, Texas Health & Human Services. Email: andrew.wash@utexas.edu.

Objective: The 2016 Accreditation Council for Pharmacy Education standards for Doctor of Pharmacy (PharmD) programs include requirements regarding patient assessment (PA) skills that are needed to collect and interpret objective clinical data. However, workforce survey data indicates that opportunities for students to practice these skills in real-world settings are limited. Study objectives include: 1) Assess how often PA skills learned in the PharmD program are utilized by fourth year pharmacy (P4) students on their Advanced Pharmacy Practice Experiences (APPEs), 2) Determine how competent students felt about performing the skills, and 3) Examine the relationship between grade-point average (GPA) and post-graduation plans and skills performed. Student-reported reasons for not performing skills were also examined.

Methods: A cross-sectional survey design was used. In Spring 2019, P4 students enrolled in APPEs were invited by e-mail to complete a questionnaire assessing 13 PA skills (e.g, measuring blood pressure, depression screening, examining lymph nodes) and student information (GPA, post-graduation plans). Respondents who replied "yes" to performing a skill were asked to indicate how frequently the skill was performed on a 3-point scale (1 = Rarely to 3 = Frequently) and to rate their perceived competence in performing the skill on a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). Respondents who replied "no" were asked to provide the reason for not performing a skill. Descriptive and bivariate (chi-square) statistics were used for data analysis. The a priori p-value was <0.01 to account for multiple comparisons.

Results: A total of 102/126 students participated (80.9% response rate). Most (67.6%) had a GPA of 3.5 or higher and were pursuing practice positions (50.0%) or postgraduate training (42.2%). The three most commonly performed skills were measuring blood pressure (75.5%), evaluating metered-dose inhaler (MDI) technique, (73.5%), and peripheral edema assessment (35.3%). The three skills least commonly performed were lung auscultation (7.8%), peak-flow meter evaluation (5.9%), and lymph node examination (2.0%). Measuring blood pressure and evaluating MDI technique were also the skills with the highest perceived competency rating (mean=4.6+0.7 for both skills) followed by peripheral pulse assessment (mean=4.5+0.5). The skills with the lowest mean perceived competency were substance use screening and diabetic foot exam (mean=3.7+0.9 and 3.7+0.8), lung auscultation (3.4+0.7), and heart auscultation (2.8+1.0). For all skills, a relatively low proportion of students indicated that they performed the skills; however, 28.6% of the students who measured blood pressure indicated that they did so frequently. For those who did not perform a skill, the most common reasons were no opportunity to perform the skill (range across skills 20-70%) or other healthcare professionals performed the skill (range across skills 12-68%). Chi-square results showed no significant relationships between GPA or post-graduate plans for any PA skill.

Conclusions: When students have an opportunity to perform PA skills on APPEs they have a high level of perceived competency. Increasing opportunities for pharmacy students to practice PA skills while on APPEs could be accomplished by preceptor education, requiring performance of skills on APPEs, and encouraging students to proactively identify situations to use skills.

180-Regulatory Reforms to Address Rising Popularity of Electronic Cigarettes (E-Cigs). Xie A, University of Southern California. Email: anniexie@usc.edu.

Objective:: This study was conducted to assess the usage of electronic cigarettes (e-cigs) among adolescents alongside analysis of current U.S. Food and Drug Administration (FDA) regulations for e-cigs. In June 2019, San Francisco became the first city in the United States to impose a ban on e-cigs. This ban was imposed after delays in FDA provisions requiring manufacturers provide quality control information and undergo a review of their product's impact on public health. The deadline for manufacturers to submit applications for review was delayed until August 2022 and e-cigs remain on the market indefinitely. San Francisco Supervisor Shamann Walton believes manufacturers are reluctant to submit their product safety and marketing data to the FDA to protect revenues while continuing to target adolescents and young adults (AYA).

Methods: A literature review was conducted to examine the current landscape of nicotine use among AYAs (ages 12-25), and to compare federal and state regulations of e-cigs.

Results: Findings from a narrative literature review suggest e-cigs are the most popular source of nicotine among American youth. Of 110 relevant results analyzed related to nicotine consumption, sources cited were secondhand smoke (n=1, 0.90%), hookah (n=2, 1.82%), cigarettes (n=7, 6.36%), non-cigarette tobacco products (n=16, 14.55%), and e-cigs (n=84, 76.36%). AYA access to e-cigs may be fostered by the lack of harmonization in regulations between the federal and state level. Currently, two federal policies regulate e-cigs. The Family Smoking Prevention and Tobacco Control Act, implemented in June 2009, both established the FDA Center for Tobacco Control, and gave the FDA authority to regulate the manufacturing, distribution, and marketing of tobacco products, including e-cigs. The "Deeming Rule," implemented in August 2016, gave the Center for Tobacco Products regulatory authority over all Electronic Nicotine Delivery Systems. However, there is a lack of harmonization regarding regulations on the state level due to inconsistent definitions of e-cigs, differences in taxing e-cigs, and variations in minimum legal sales ages between states. Twenty states consider e-cigs a tobacco product, fourteen states charge sales tax on e-cigs, and the minimum legal sales age for e-cigs varies

from state to state, between 18 and 21 years.

Implications/Conclusions: Many acknowledge the potential therapeutic benefit of e-cigs; they may aid longtime smokers in smoking cessation by providing comparable nicotine content with fewer carcinogens than the combustion of traditional cigarettes. However, it is incontrovertible that many e-cigs contain high levels of nicotine, a highly addictive and toxic substance. Additionally, it is important to note that e-cigs have yet to receive FDA approval to be indicated as smoking cessation devices. Meanwhile, e-cigs are rising in popularity among teenagers, potentially baiting a new generation to become addicted to nicotine. In the past three years, e-cigs have evolved from a potential smoking cessation therapy to a drug abused by adolescents. Understanding the underlying cause can help make informed judgments when implementing policies to more effectively regulate e-cigs.

Geriatrics and Long-Term Care

181-Blooming While Booming: Implementing a Community Pharmacy-based Surveillance Process for Potentially Inappropriate Medications (PIMs) in a Predominantly Mexican-American Elderly Population. Cereceres D, La fe, Maxwell M, UTEP School of Pharmacy. Email: Dcereceres3@utep.edu.

Objective: The purpose of this project is to innovate the way the community health center pharmacy team detects, assigns risks, develops safety alerts, and clinically resolves the dispensing and use of potentially inappropriate medications (PIMs) in a community-based ambulatory care central pharmacy with a predominantly older Mexican-American population. The project will be developed and implemented at a closed-system community pharmacy based in a federally classified health center (FQHC) serving an underserved and low-income region of the U.S.-Mexico border. Further, the pharmacy team will provide education to providers and patients about these PIMs. Approximately 40 % of people aged 65 years or older are prescribed at least five medications per month and about 12 % use ten or more different medications. According to the literature, there is an added concern for increased anticholinergic burden in the elderly Mexican-American population which can increase morbidity, mortality, and complexity of care. The use of PIMs can lead to a huge financial burden on both the older patient and health system. By taking a pro-active surveillance approach to emphasize safe patient medication use, we hope to enhance the pharmacy's safe medication usage for its elderly patients while facilitating education to providers and patients.

Methods: The population focus of this project is on patients 55 years and older who have filled prescriptions at the FQHC's community pharmacy. The community pharmacy team will complete this project in three major steps with follow up education. 1) We will identify potentially inappropriate medications in the elderly (classified in the 2019 Beers List) from the formulary. 2) We will review pharmacy dispensing records for any medications that are classified as PIMs each month for six months (September 2019--March 2020) leading to the integration of safety alerts in the dispensing software.3. To evaluate prescribing habits with Beers criteria medication, we will generate a retrospective report to see which PIMs were dispensed in the previous 30 days. The team will identify alternative medications with fewer potential risks and submit these findings and recommendations to the Pharmacy and Therapeutics (P & T) for appropriate medication deletions and substitutions. We will update the existing formulary with recommendations and safer alternative medications. 3) The pharmacy team will coordinate community outreach events in English and Spanish to provide awareness to the clinic's population of the potential hazards of some obtainable over the counter medications. Further, we will notify FQHC employed pharmacists, pharmacy technicians and providers describing the trends and safer prescribing recommendations.

Results: Results in progress. The compiled evaluations will be used for quality improvement for subsequent sessions.

Implications: Results in progress.

182-The Impact of the Consultant Pharmacist on Pneumococcal Vaccine Administration in a Long-Term Care Facility. Korda H, O'Neil C, Stewart-Lynch A, Duquesne University. Email: kordah@duq.edu.

Objective: Immunization is essential in the prevention of infectious diseases. Vaccine preventable diseases, including pneumococcal, are common in long-term care (LTC) facilities and immunization needs assessments are often overlooked upon admission and during transitions of care. Since Centers for Medicare & Medicaid Services (CMS) updates in 2017, LTC facilities are now rated on their resident vaccination rates. Consultant pharmacists are uniquely positioned to review and recommend vaccinations to prescribers in the LTC setting. This study aims to describe the impact of consultant pharmacist vaccine recommendations on the frequency of pneumococcal vaccines administered among older adults residing in a LTC facility.

Methods: Retrospective, observational, cohort study of adults residing in a LTC facility in Southwestern Pennsylvania. Using data gathered from a review of electronic health records, comparisons in immunizations rates between two patient cohorts will be conducted. Cohorts under study will be defined by exposure to a consultant pharmacist immunization needs assessment and subsequent recommendations. Cohort 1 will include subjects admitted between December 1, 2016 and December 1, 2017 who were not exposed to the pharmacist review. Cohort 2 will include subjects admitted between December 1, 2017 and December 1, 2019 who received a pharmacist review. Immunization rates will be defined within each cohort by number of vaccines administered per month. Additional data collected will include patient related factors (age, length of stay, number of admissions), reason for patient's refusal of vaccination, and number of accepted recommendations. The immunization needs assessment was commenced in December 2017. In this practice, a consultant pharmacist provided daily vaccination monitoring during admission by reviewing each patient's immunization record for potential gaps. Immunization records were obtained by reviewing a resident's hospital admission history,

resident recollection, and checking the immunization record in the Pennsylvania Statewide Immunization Information System Patient Registry (PA-SIIS). Recommendations for needed vaccines were then sent weekly to a medical secretary and the charge nurse or director of nursing approved the recommendations. The medical secretary recorded acceptance and administration of the vaccination or refusal. These data will be analyzed using inferential statistics to compare immunization rates between cohorts and descriptive and nonparametric statistics to assess the impact of the clinical pharmacists' recommendations on pneumococcal vaccine administration.

Results: Data collection in process. Results to be presented at APhA 2020.

Conclusion: This study will provide additional information on the impact of a consultant pharmacist-led intervention targeting pneumococcal vaccination rates among adults residing in LTC facilities.

183-Effect of a Pharmacist-Led, Patient-Focused Initiative on Deprescribing Over-the-Counter Non-Steroidal Anti-Inflammatory Drugs and First-Generation Antihistamines in Geriatric Patients. Murphy K, McLendon A, Wilson D, Fuller S, Holland M, Nye A, Murphy K, Campbell University. Email: kgmurphy0125@campbell.edu.

Objective: Glenaire is a continuing care retirement community for seniors located in Cary, North Carolina consisting of care throughout the spectrum of independent living (IL), assisted living (AL), and skilled nursing (SN). There are about 300 IL residents who remain community-dwelling but who are able to transition to either AL or SN when necessary as determined by the resident, family, and/or care plan team. An annual clinical pharmacy service is offered to all IL residents consisting of a home visit to update and review the resident's current prescription and non-prescription medications. The residents are given an updated medication list, consisting of medication name, dose, and daily administration schedule, as well as a written pharmacotherapy recommendation, as deemed necessary, for the resident to consider and/or discuss with his/her primary care physician. At the following annual visit, recommendations may be repeated or adjusted to reflect the medication changes occurring throughout the time since the last visit. A backlog of prepared medication lists with written pharmacotherapy recommendations is maintained within the electronic health records at Glenaire. Following publication of the D-PRESCRIBE trial, this pharmacy service has been altered beginning August 1, 2019 to include the deprescribing educational materials, as made public by the D-PRESCRIBE trial investigators, which are given to qualifying IL residents. The D-PRESCRIBE trial suggested that pharmacist-led and patient-focused (rather than provider-focused) educational intervention can significantly increase the discontinuation of PIMs in the geriatric population. However, given that the primary endpoint required prescription filling documentation within community pharmacy databases, the study was unable to analyze the impact of the intervention on discontinuation of first-generation antihistamines, which are usually obtained OTC and infrequently by prescription. The authors also admitted to difficulty in recruitment for the NSAID class of medications, as these are similarly often obtained OTC rather than by prescription. It could be argued that proper evidence on the benefit of the published patient education materials for these particular drug classes is lacking. Therefore, it is pertinent to publish further evidence to support the use of such an intervention. The purpose of this study is to determine whether implementation of these educational materials, particularly for OTC NSAIDs and first-generation antihistamines, in addition to standard of care (written pharmacotherapy recommendation on the patient's complete medication list) has resulted in greater discontinuation of these targeted PIMs in patients at Glenaire. The study design will be retrospective cohort. The primary objective is to compare discontinuation of each targeted PIM (including OTC oral NSAIDs and first-generation antihistamines) between previous standard of care (patients who have received a written pharmacotherapy recommendation) and a quality of care improvement practice (written pharmacotherapy recommendation(s) plus a patient-directed deprescribing pamphlet). The secondary objective To describe differences in population subgroups for the primary outcome, including class of PIM, number of PIMs, total number of medications, age, gender, marital status, number of listed providers, length of time as a resident at Glenaire, and patient educational background, as well as for the subset of patients who were included in both the intervention and control groups.

184-Identification and Deprescribing of High-Risk Medications for Older Adults in the Community Pharmacy Setting. Oyen A, Witry M, Veach S, University of Iowa, McDonough R, Kent K, Towncrest Pharmacy. Email: austin.oyen@uiowa.edu.

Objective: High-risk medications are a serious public health concern as these medications can cause falls, delirium, or other adverse drug events. As patients age, they are more susceptible to adverse drug events due to an overall decrease in drug clearance and an increase in number of medications. CMS lists high-risk medications (HRMs) and includes drugs from several therapeutic classes such as: anticholinergic medications, certain antidepressants, and some oral anti-diabetic medications. Community pharmacists can address high-risk medication use and the potential adverse drug reactions they may cause. The goal of this project is to reduce the number of HRMs being dispensed to older adults in the community setting. The quality improvement project will utilize educational targeted medication reviews and D-PRESCRIBE educational brochures to supplement patient learning. The objectives of this study are to: 1) Describe the integration of HRM education and deprescribing into the pharmacy workflow, 2) Document the number and types of targeted medication interventions for patients taking HRMs and physician responses to pharmacist recommendations.

Methods: This quality improvement project will be conducted in an independent pharmacy in the Midwest U.S. that uses custom-designed clinical software to identify drug therapy problems and document interventions. Patients included in this project will be age 65 years and older and taking one or more medication(s) within the selected drug classes: NSAIDs, first-generation antihistamines, sedative-hypnotics, benzodiazepines, sulfonylureas, and antidepressants. Patients will be excluded if in hospice care or are non-English speaking. Patients will be identified during the pharmacy software augmented drug utilization review, and a medication review will be offered at the point of dispensing either face-to-face or over-the-phone. Patients who agree to a review will receive a D-

PRESCRIBE educational brochure describing the risk of the medication(s) and alternatives. Communication will be sent to the patient's prescriber(s) via fax following the medication review and will include education provided, pharmacist recommendation(s), and patient acceptance of recommendation. The pilot project will occur over a four-month study period. An estimate of the time spent on each task will be recorded. Variables that will be collected for each subject include: patient demographics, high-risk medication(s), patient agreement to participate in medication review, pharmacist education provided, and recommendation(s) to reduce the use of high-risk medications (drug discontinued, drug switched, or the dose reduced). Patient acceptance and provider responses to pharmacist recommendations will be recorded. Data will be analyzed using descriptive statistics to describe demographics, high-risk medications identified, pharmacist interventions, drug therapy problems, patient acceptance, and provider responses.

Results: Research in progress.

Conclusion: Research in progress.

185-Trends in Falls Risk-Increasing Drugs (FRIDS) and Rate of Fatal Falls in Older Adults, 1999-2017. Shaver A, Clark C, Feuerstein S, Wahler R, Jacobs D, Hejna M, State University at Buffalo. Email: amyshave@buffalo.edu.

Objective: Background Recent studies have reported that falls mortality are on the rise and over 30% of those aged 65 and older report falling annually. Risk factors for falls are numerous including: age, a history of falls, unsteady gait, vision impairment, and polypharmacy. The objectives of this study are three-fold: one, to verify if deaths from falls are increasing in persons 65 years and older and whether the number of persons in this age group consuming fall risk increasing drugs (FRIDs) is increasing concurrently. Two, to determine if any FRID category has been filled more frequently than others during the study period. Three, to determine if there is an increase in the use of over the counter (OTC) FRIDs either alone or in combination. We hypothesize that one, FRIDs are increasingly consumed concurrent with an increase in mortality due to falls; that two, prescriptions for antidepressants are outpacing other FRID prescriptions in this population and three, that use of antihistamines in this population are on the rise.

Methods: The study was a longitudinal analysis of adults aged 65 years and older from two data sources, the National Vital Statistics System and the Medical Expenditure Panel Survey from 1999 to 2017.Direct age standardization was completed on falls mortality statistics using 2010 as a standard population. Falls mortality was also collected according to both gender and race. FRIDs were defined per the STEADI-Rx fall checklist. Total persons utilizing at least one FRID was collected for each year. Finally, the number of persons receiving at least one fill for each FRID category was measured for each year. Linear regression was utilized to assess significance of trend.

Results: Age-adjusted mortality rate due to falls increased from 30.67 per 100,000 (95% CI 30.66, 30.68) in 1999 to 66.44 per 100,000 (95% CI 66.43, 66.44) in 2017; among men the increase was from 27.28 (95% CI 27.27, 27.29) in 1999 to 64.81 in 2017 (95%CI 64.80, 64.82); among women the increase was from 35.16 in 1999 (95% CI 35.15, 35.18) to 68.59 in 2017 (95% CI 68.58, 68.60). The number of persons who received at least one FRIDs increased from 22,673,990 in 1999 to 36,805,785 in 2017 (p for trend <0.0001). The use of antidepressants has increased by 241% over the study period (p for trend <0.0001) whereas the use of antihistamines has decreased by 16% over the same period (p for trend <0.0001).

Conclusions: Both use of FRIDs and mortality due to falls are concurrently on the rise among those aged 65 years and older. Though it is possible that the increase in use of FRIDs may contribute to the increase in falls mortality in this population, this cannot be firmly concluded from the current study. Future research examining the potential relationship between FRIDs and falls-related mortality utilizing nationally representative individual data are being planned. Increasing use of antidepressants in this population presents an opportunity for pharmacists to advise both prescribers and patients on the potential risks involved.

186-Direct Oral Anticoagulants in Long-Term Care Facilities: Rates of FDA-Approved Dosing. Whitney B, McCabe A, Oser T, Hammell N, CVS/Omnicare, Lengel A, University of Toledo, Sakel K, Bowling Green State University. Email:

benjamin.whitney@rockets.utoledo.edu.

Objective: The objective of this study is to identify rates of FDA-approved dosing of direct oral anticoagulants (DOACs) in patients residing in long-term care facilities. This study aims to identify an area where pharmacists can improve the safety and efficacy of patients' therapy. Previous studies have found that around 40% of patients on a DOAC with reduced renal function requiring a reduced dose were actually on a standard dose, putting them at a higher risk for bleeding. This retrospective analysis will determine if patients in long-term care facilities have similar rates of non-FDA-approved dosing as the general population.

Methods: Patients will be included in this retrospective chart review if they were prescribed rivaroxaban, apixaban, or dabigatran between August and October, 2019, and if they are a resident in one of two long-term care chains that utilize PointClickCare, an electronic health record, for patient charting. Patients will be identified by running a drug-movement report in Omniview, a drug utilization tool. Their charts in PointClickCare will be reviewed to collect the following data: prescribed drug, dose, duration, indication, age, weight, height, and serum creatinine. After data collection, patients' DOAC dose will be evaluated based on their estimated creatinine clearance, using the Cockcroft-Gault equation. Based on FDA-recommended dosing, the rates of higher, lower, or correct doses will be calculated. Secondarily, the duration of treatment will be evaluated for appropriateness based on documented indication.

Results: The project is currently in progress and data collection is ongoing.

Implications/Conclusions: The results of this study may identify an area where pharmacists can play a bigger role in improving patient care. Opportunities may arise for pharmacists to provide education to fellow healthcare providers. It may also provide the chance for pharmacists to play a more active role in monitoring patients on direct oral anticoagulants.

Health Disparities and Cultural Issues

188-Evaluation of the Barriers Surrounding Pharmacist Utilization of a Social Determinants of Health Tool. Asonye C, Fu D, Barbour L, Green R, Johns Hopkins Home Care Group, Pherson E, The Johns Hopkins Hospital. Email:

Objective: Objectives of this study will be to; 1) Identify the social determinants of health (SDOH) needs of patients referred to home based medication management (HBMM) service and pill box clinic services 2) Characterize and describe the patient populations whom have unmet social needs 3) Assess the barriers pharmacists may face by incorporating a SDOH tool/survey into routine practice and 4) Develop a document of appropriate health system resources available to patients with unmet social needs. SDOH refers to factors such as socioeconomic status, education, physical environment, employment, and access to healthcare that impacts quality of life. Previous studies have shown that adult deaths have been attributable to social factors such as low education, low social support, poverty and more. Investment in interventions to address SDOH (i.e. care coordination, income support, and housing) result in positive health outcomes. Our health system recently launched a SDOH tool in the electronic health record (EHR), for the purpose of obtaining information regarding social factors that may increase patient risk of negative health outcomes. Since pharmacists are accessible to patients within the community, they are in a position to better identify SDOH. Thus, more needs to be done to equip them with the knowledge and skills of available resources that the health system has to offer. The purpose of this research project is to assess the barriers surrounding pharmacist utilization of the SDOH EPIC tool for patients referred to the pharmacist-led HBMM service and pillbox clinics.

Methods: This is a single centered, prospective cohort study for patients referred to the pharmacist-led HBMM service and pillbox clinics from November 1st 2019 through February 1st 2020. Adult patients age ≥19 years referred to the HBMM and pill box clinics services with a primary care provider (PCP) within the health system will be included. Demographic data will be collected via chart review and will include age, race, sex, involvement of case manager, social work or community health worker, and lastly select comorbidities. SDOH variables in the EHR, including food insecurity, transportation barriers, depression, tobacco use, and financial will be collected by the pharmacist from participating patients. As for barriers faced by pharmacists, time it takes to gather the SDOH variables, comfort level, and patient willingness to provide information will be collected. Statistical analysis descriptive statistics will be used to summarize the data collected. STATA 16 will be used to analyze data.

Results/Implications/Conclusions: Results pending. Data will be collected from 11/1/2019 to 2/1/2020 and will be analyzed early March.

189-Assessing the Cultural Climate for LGBTQ Employees and Student Pharmacists in Three Geographically-Distinct Pharmacy Schools and Colleges. Kinsey J, Harris L, Mercer University, Leiva M, California Health Sciences University, Scoular S, University of Colorado. Email: kinsey_jd@mercer.edu.

Objective: Due to a dearth of information on the cultural climate for Lesbian Gay Bisexual Transgender or Queer (LGBTQ) employees and students at pharmacy campuses in the United States, we surveyed three pharmacy schools and colleges, each in the West, Inter-mountain West, and Southeast. In 2015 the Center for the Advancement of Pharmaceutical Education (CAPE) provided guidance to the pharmacy education community regarding desired program outcomes. One of these learning outcomes was defined as cultural sensitivity or an ability to "recognize social determinants of health to diminish disparities and inequities in access to quality care." Despite the recent emphasis on student pharmacists achieving cultural competence or humility, stigma and discrimination persist within institutions and decrease a collective ability to meet the CAPE includer outcome. Our study seeks to understand the difficulties still facing LGBTQ employees and students at the surveyed pharmacy schools and colleges and ultimately provide specific recommendations to foster cultural humility.

Methods: Through networking events at various academia training seminars, four clinical pharmacy faculty from three institutions realized a mutual interest in fostering cultural competence and sensitivity related to LGBTQ employees and students at pharmacy schools and colleges. Data was collected using an anonymous, comprehensive survey that was developed and validated to be delivered to all student pharmacists and employees at each of these three institutions. The survey included both qualitative and quantitative questions and was designed as a campus climate survey to assess the attitudes and experiences of students and employees on each institution's campus as related to LGBTQ issues. The institutions were located in three distinct regions of the continental United States and thus represent differing social and political views. This study was a prospective cross-sectional design and will employ either the ANOVA test or the Kruskal-Wallis test, dependent upon the distribution of the analyzed data. Preliminary

Results: As we expected, there were regional differences between the three pharmacy schools and colleges. Though the full analysis of the results is pending, interesting subgroup variations were noted among faculty, staff, and student pharmacists surveyed.

Conclusions/Implications: While there has been an increasing effort to incorporate aspects of cultural humility in pharmacy curriculum and the classroom, LGBTQ employees and student pharmacists within the three institutions surveyed still face numerous

obstacles compared to their hetero-normative counterparts. Though variable results were expected due to regional differences, negative experiences of the LGBTQ participants may reveal additional discrepancies in curriculum or employee training. In addition to decreasing the productivity and full participation of those surveyed, there may be direct impacts on patient care from student pharmacists or clinical faculty who are not well versed in LGBTQ health and wellness concerns. The data collected from this study can be shared with other pharmacy schools and colleges as well as relevant stakeholders (e.g. preceptors) to help identify potential gaps in cultural humility curriculum and employee training.

190-Role of Culture in Medication Adherence of Antidepressants Among Latinx with Depression: Systematic Review and Meta-Analysis or Meta-Ethnography. Manzor Mitrzyk B, Farris K, Santos M, Freeman J, University of Michigan, Ortiz Rodriguez A, University of Puerto Rico. Email: bmitrzyk@umich.edu.

Objective: The objectives are to conduct a systematic review to determine how culture influences medication adherence of antidepressants among Latinx with depression and to complete a meta-analysis and/or meta-ethnography on the available data. Latinx comprise 18% of the US population and are the second-largest racial/ethnic group after Whites. Latinx are more likely to discontinue antidepressants within the first 30 days of therapy and have a 40% higher rate of antidepressant non-adherence (after adjusting for demographics, language, and insurance status) than NonLatinx Whites. Culture shapes the social behaviors and norms that guide thinking, decisions, and actions of an individual. The impact of culture on medication use behaviors could in part explain some of intentional non-adherence in this population.

Methods: For this systematic review, comprehensive search strategies will be undertaken to seek all available studies. We developed a search strategy for MEDLINE (PubMed) which will be translated to Embase, Cumulative Index to Nursing and Allied Health Literature (CINAHL), PsycINFO, and Web of Science electronic databases. Using population (Latinx) and disorder (depression) and treatment (antidepressant) as search concepts. We excluded MeSH terms for culture and adherence because this approach artificially narrowed the search. Gray literature will be identified by searching Dissertation abstracts international, Education Resources Information Center (ERIC), Open-System for Information on Gray Literature database, and conference proceedings/abstracts as well as soliciting authors for unpublished data. We have a team of 2 reviewers and 1 alternate to negotiate disagreements during the screening and review strategy processes. The screening strategy will identify studies that assess the effect of culture or cultural values on adherence to antidepressants among US Latinx adults with depression. Included studies will have widely accepted quantitative clinical trial methodologies such as randomized controlled trials and mixed methods studies. For qualitative data, we will include studies with widely accepted data collection methods and well-described methodologies including interviews, focus groups, and direct observation and exclude commentaries, protocols, and systematic reviews. We will also exclude studies assessing post-partum, perinatal, or bipolar depression. Meta-analysis will be completed on the eligible quantitative data. Meta-ethnography will be completed on the available qualitative data. We expect there to be differences in the data based on age, gender, country/place of origin (i.e., Mexico, Puerto Rico, Cuba), and acculturation status. We plan on conducting a subgroup analysis to account for these possible differences in the results.

Preliminary Results: We identified 335 citations in the PubMed search strategy. The search, screening, and review processes are ongoing. Depending on the data identified in the review process, a meta-analysis and/or meta-ethnography will be conducted. The systematic review and analysis will be completed and presented at APhA 2020.

Implications/Conclusions: A systematic review and subsequent analysis would provide a comprehensive summary of the literature and describe the currently understood effects of culture on adherence to antidepressants among Latinx with depression. These data will lay the foundation to develop interventions that focus on and address cultural factors (positive and negative) that effect the adherence of antidepressants with the goal of improving intentional adherence in this population.

Health Literacy

191-Health Literacy and its Effects on Lowering A1c in Prediabetes and Type 2 Diabetes Mellitus. Kelly K, Marriott J, Olenik N, Purdue University, Moses M, Golembeski D, Mathes Pharmacy. Email: kelly122@purdue.edu.

Objective: The objective of this study is to characterize reasons why differING health literacy levels affect the success of lowering a1c for patients with prediabetes or type 2 diabetes. Studies found many factors like limited health literacy contribute to patients having elevated A1cs. Literature shows health literacy and self-efficacy are closely related though there are currently no methods that measure self-efficacy like there are for health literacy. Self-efficacy reflects confidence in the ability to exert control over one's own motivation. Self-efficacy also refers to an individual's belief in his or her capacity to execute self-care behaviors necessary to produce specific performance attainments like decreasing A1c. Though there is a sufficient amount of literature available indicating people with adequate health literacy are more motivated to decrease A1c than those with limited health literacy, there are gaps remaining in literature exploring reasons why.

Methods: This qualitative study will include patients of a diabetes center in New Albany, IN. This center is a family owned and operated pharmacy, diabetes center, and home care center serving southern Indiana since 1931. Patients of the diabetes center will be contacted via phone calls to ask if they would like to participate in this qualitative study. A maximum of 3 attempts to contact patients will be made and voicemails will be left if there is no answer. Patients will be enrolled until thematic saturation is reached.

After patients agree to participate, they will be asked to set up a time and day when they can come into the center. Data will be collected in two parts: one-on-one health literacy assessment called Newest Vital Sign (NVS) and 30-minute interview. The NVS assessment is based on a nutrition label from an ice cream container accompanied by 6 questions and takes about 3 minutes to complete. Participants will be given the NVS label and then verbally asked 6 questions about it. Based on the number of correct responses, a co-investigator will assess patients' health literacy level as adequate literacy or lack of adequate literacy. Afterwards, participants will have the interview. Interview questions will be based on the Health Belief Model to further assess why a certain health literacy level equates to a certain amount of self-efficacy. For qualitative data analysis of assessments, a co-investigator will add up correct responses and record number of correct and incorrect answers at bottom of assessment. For qualitative data analysis of interviews, after transcription, codes created by coding software will be made for each motivating factor and barrier shared during interview. Co-investigators will compare and contrast similarities and differences between codes of the different health literacy levels as well as analyze whether A1c significantly decreased or NOT amongst the health literacy groups. The A1CS analyzed will be retrospective. Submission to IRB occurred in September 2019. Approval was received in October 2019.

Final Results: Results to be presented at the APhA Annual Meeting.

Conclusions/ Implications: Information gathered from this study will further our understanding of patients' self-motivation and its influence by health literacy.

HIV and Acquired Immunodeficiency Syndrome

192-Impact to HIV Clinical Outcomes in Adults with HIV with Historical M184V Resistance After Antiretroviral Regimen Simplification. Abraham T, Walgreens. Email: tanya.abraham@walgreens.com.

Objective: Objectives Evaluate impact to viral suppression and antiretroviral (ARV) regimen adherence in patients with human immunodeficiency virus (HIV) and historical M184V resistance after switching from an HIV regimen containing 3 fully active drugs and resistant FTC/3TC, to a simplified regimen with two fully active drugs and resistant FTC. Background One obstacle healthcare professionals face when selecting HIV regimens for patients is the development of antiretroviral resistance. The most common treatment-emergent resistance mutation is known as M184V, which causes high-level resistance to emtricitabine (FTC) and lamivudine (3TC). When this mutation develops, it is common practice to see the patient continue on a regimen that includes the resisted component, as the presence of the mutation has shown various benefits in therapy. As newer HIV medications develop, there may be regimen possibilities that allow patients who possess the M184V mutation to be virologically suppressed, while also decreasing pill burden. There has yet to be any published data on patients with documented historical M184V and such regimen simplification. Outcomes from such a study may allow pharmacists to suggest future regimen switches to providers for patients with M184V, as well as impact clinical decision making for providers on a larger scale.

Methods: This is a multicenter, retrospective study of patient electronic medical records from two Chicago community health clinics of adult patients with HIV and historical M184V resistance. Patient records from 2014 to 2019 were included in the study if the patient was ≥ 18 years of age; had documented resistance; were treated with an FTC/3TC regimen containing three fully active components, had at least one documented HIV viral load, and were then switched to a simplified FTC regimen, containing two fully active drugs for at least three months with a documented HIV viral load. The study allowed for the inclusion of patients with detectable viral load with the previous regimen, in order to assess for changes in viral suppression after simplification. Patients who discontinued therapy before an HIV viral load was measured were excluded from the study. The study approval is pending approval from the participating health clinics' Institutional Review Board. The primary endpoint of this study is achieving or maintaining HIV RNA viral suppression of ≤ 200 copies/mL. Viral suppression will be assessed statistically via chi-squared test. Antiretroviral therapy adherence will be assessed using proportion of days covered from pharmacy dispensing data, categorizing within brackets of ≥ 90%, 80-90%, and ≤ 80%. Adherence data will be assessed statistically via Wilcoxon rank sum test.

193-Survey of Kentucky Pharmacists' Perspective and Barriers on Providing Post-Exposure Prophylaxis Therapy. Chakravarthy V, Burris J, Sullivan University. Email: vbchak@gmail.com.

Objective: Kentucky (KY) was ranked 23rd nationally for an estimated annual HIV diagnosis rate of 7.9 per 100,000 in 2017. Many with HIV do not get tested before they become sick and in 2018, 10,567 HIV infections had been diagnosed with 63 percent of those cases progressing to AIDS. The Kentucky Board of Pharmacy has authorized protocols allowing pharmacists to dispense non-controlled medications for certain health conditions and procedures including prevention of HIV transmission. It is expected that a similar protocol will be approved to allow pharmacists to dispense HIV Post-exposure Prophylaxis (PEP) therapy without a prescription. To determine the value of such a protocol, collecting perspectives of pharmacists about assessing patients for HIV PEP therapy would be essential in providing insight as to what trainings and procedures should be included. Primarily, the survey-based study aims to measure Kentucky pharmacists' competence and confidence in dispensing HIV PEP therapy. Secondarily, the study intends to identify potential barriers with implementing a protocol for HIV PEP therapy.

Methods: This study has been submitted to the Institutional Review Board and has been approved. Licensed Kentucky pharmacists working in out-patient facilities will be emailed to voluntarily participate in a survey on SurveyMonkey. The participants will create a unique study identification when submitting their responses anonymously. The survey will include multiple-choice questions on the

pharmacists' knowledge of PEP therapy, a rating scale on their perspective of dispensing PEP therapy, and an open-ended question addressing their opinion on PEP therapy in their practice setting. The data will be collected and compiled from SurveyMonkey. A descriptive analysis will be conducted to monitor for trends. Based on the first survey results, an educational packet will be created to address the identified knowledge deficiencies in dispensing HIV PEP therapy and barriers to implementing a HIV PEP protocol. The educational packet and a second survey will be similarly emailed to licensed Kentucky pharmacists by third party entities. The data for the second survey will undergo a descriptive analysis and a paired t-test will be conducted to identify the differences between the first and second surveys.

Preliminary/Final Results: Pending.

Conclusions/Implications: Pending.

194-Longer-Term Safety and Efficacy of Elvitegravir/Cobicistat/Emtricitabine/Tenofovir Alafenamide in Virologically-Suppressed Adults Living With HIV and End-Stage Renal Disease on Chronic Hemodialysis. Eron J, University of North Carolina, Edmundson M, Gilead Sciences Inc., Lelievre J, Hôpital Henri Mondor, Kalayjian R, MetroHealth Medical Center, Slim J, Saint Michael's Medical Center, Wurapa A, Infectious Disease Specialists of Atlanta, McDonald C, Tarrant County Infectious Disease Associates, Cua E, Nice University Hospital, Wilkin A, Wake Forest University, McKellar M, Duke University, Majeed S, Cox S, Gilead Sciences. Email: jeron@med.unc.edu.

Objective: Background: HIV treatment for individuals with end stage renal disease (ESRD) on hemodialysis (HD) has previously required complex dose-adjusted regimens. We evaluated the safety and efficacy of single tablet, once daily elvitegravir/cobicistat/emtricitabine/tenofovir alafenamide (E/C/F/TAF) in people living with HIV (PLH) and ESRD on chronic HD.

Methods: Virologically suppressed adult PLH with ESRD on chronic HD for ≥6 months were switched to open-label E/C/F/TAF 150/150/200/10mg once daily for 96 weeks. Efficacy was assessed as the proportion of participants who maintained virologic suppression (HIV RNA <50 copies/mL) using the snapshot algorithm. Safety and participant satisfaction were assessed throughout the study.

Results: We enrolled 55 participants with median age 51yrs (range 23-64) with median time on HD 6yrs (range 1-17). In the per protocol analysis set, virologic suppression was maintained in 30 of 31 participants (96.8%, 95% CI [83.3%, 99.9%]) at week 96. In the full analysis set, virologic suppression was maintained in 30 of 55 participants (54.5%; 95% CI [40.6%, 68.0%]); one discontinued therapy due to lack of efficacy, and W96 data were unavailable for 24. Of the 24 participants lacking W96 data, 17 discontinued study drug early and 7 had missing data while on study drug; all had HIV RNA <50c/mL at the last pre-week 96 check. Treatment-emergent AEs occurred in 53 (96.4%) participants, and study-drug-related AEs occurred in 7 (12.7%). Treatment-emergent AEs leading to premature study drug discontinuation occurred in 4 (7.3%) participants; two were considered study-drug-related (allergic pruritus and peripheral neuropathy in one participant each). No study-drug-related serious AEs were observed. 85.7% (30/35) of responding participants reported they were 'much more satisfied' with their regimen.

Conclusions: Single tablet, once-daily E/C/F/TAF was effective in maintaining virologic suppression in PLH on chronic HD over 96 weeks of follow-up. E/C/F/TAF was well-tolerated and was associated with improved participant satisfaction. These data demonstrate that E/C/F/TAF is a safe and effective alternative to more complicated regimens in PLH on chronic HD, with the potential to improve patient satisfaction and quality of life.

196-Analysis of Drug Interactions Associated with Single Tablet Regimens (STRS) Among HIV-Infected Patients in an Inner-City Clinic. Green J, Williams S, Amenyedor D, Johnson M, Howard University, Gajjala J, Howard University Hospital. Email: Jonathan.green@bison.howard.edu.

Objective: The management of HIV/AIDs has progressed tremendously in the last few years with the addition of single tablet regimens (STRs). STRs have played an essential role by increasing health outcomes in HIV patients, by decreasing their pill burden and preventing disease progression. STRs incorporate various antiretroviral medication classes and their individual components are often overlooked, as all STRs on the market today are only available under their trade name. Many HIV patients are often on other medications for comorbid conditions and drug-drug interactions become an issue because the individual components of STRs are associated with a myriad of interactions. STRs have become a mainstay therapy so researchers must identify potential drug-drug interactions associated with these agents. It is vital to assess the safety profile of these newer STRs medications and improving health outcomes in HIV patients with co-morbidities. The objectives of this study are to: (1) analyze the frequency at which drug interactions occur among patients on a single tablet regimen (STR) for treatment of HIV; and (2) review specific drug interactions trends to aid appropriate prescribing.

Methods: This is a retrospective analysis, which will be conducted on all HIV infected patients on STRs who have been seen at least once at the Center for Infectious Disease Management and Research (CIDMAR) clinic at Howard University Hospital. This study will involve all HIV-positive patients who have had at least one visit during January 1, 2018 through June 30, 2018 at CIDMAR. Eligible patient's electronic medical records will be accessed from CIDMAR. The extracted medications on the medication list will be analyzed through two medication interaction checkers, Micromedex and Clinical Pharmacology. Data for each patient will be maintained in an encrypted Excel spreadsheet (no patient identifiers will be used). Descriptive statistics will be estimated for study variables such as CD4 counts, HIV viral loads, co-morbidities, and patient demographics. Also, variables such as: gender, age, race/ethnicity, ethanol

use, tobacco use, non-prescription drug use/recreational drug use, co-morbidities, and antiretroviral usage. Bivariable and multivariable analyses between study factors and the outcome of drug-drug interactions will be conducted. As well as a logistic regression adjusting for all other factors. All analyses will be done using SPSS version 23 at an alpha of 0.05.

Results: Data not yet available.

Conclusion: Data not yet available.

197-Evaluating the Prevalence of HIV-Positive Status and Impact of Pharmacist-Led Education in Homeless Adults in Spokane, Washington. Kherghehpoush S, Washington State University. Email: S.kherghehpoush@wsu.edu.

Objective: Over half a million people experience homelessness on a given night in the United States. As a result of increased exposure to disease, violence, unsanitary conditions, stress, malnutrition and substance abuse, homeless persons experience medical problems and treatment complications at higher rates than the general population. Chronic disease states that require uninterrupted treatment and high rates of adherence, such as HIV/AIDS, are more difficult to control in those with unstable housing. Individuals living with HIV who are unaware of their infection are more likely to transmit HIV than persons who are aware of their HIV diagnosis. Gay and bisexual men account for the majority of new HIV diagnoses followed by injection drug users, two sub-populations that are also disproportionately affected by homelessness. Pharmacists are some of the most accessible healthcare providers. Improved health outcomes are seen when pharmacists are involved in the care of HIV patients. Given the barriers to clinical engagement and the persistent stigma, HIV provides an important opportunity for pharmacist involvement.The purpose of this study is to assess the prevalence of HIV-positive status in the homeless population and evaluate the impact of pharmacist-led outreach programs on closing the gap to access.

Methods: The target population for this study is homeless adults in Spokane, Washington defined as individuals who are at least 18 years old and spent the previous night in a homeless shelter or other temporary housing locations, in a location that is not intended for human habitation (such as a public park, abandoned building, or vehicle). Study participants are "walk-in" patients from a local independent community pharmacy that specializes in mental health services. The study intervention is pharmacist-led and anticipated to take approximately 30 minutes from when informed consent is obtained to the end of the study protocol which includes: administration of a fourth-generation point-of-care HIV screening test coupled with comprehensive HIV education and personalized risk mitigation strategies. Participants with a reactive screening are referred to a local health clinic for follow-up and confirmatory testing through a warm hand-off made by the pharmacist. Participants with a negative screening who are high risk for HIV transmission and indicated for pre-exposure prophylaxis (PrEP) are also referred for follow-up and educated on the window-period.

Results: The primary outcome of this study is to evaluate the prevalence of HIV-positive status in the homeless population of Spokane, Washington. Secondary outcomes include % of referred patients who: had a positive diagnostic HIV test, established care, initiated treatment, and achieved viral load suppression. Time to viral load suppression and adherence are also evaluated.

Implication/Conclusion: Pharmacist-led HIV screening and education may have a significant impact on the course of illness in high-risk populations. Early initiation of treatment is a cornerstone of the national initiative: "Ending the HIV Epidemic, A Plan for America". Delaying connection to care is a major barrier to "treatment as prevention" in reducing HIV transmission and thus early detection coupled with pharmacist-led education may play a key role in the overall HIV epidemic from a treatment and prevention perspective.

198-A Phase 3b, Multicenter, Open-Label Study Switching from E/C/F/TAF or TDF-Containing Regimen to B/F/TAF in Virologically-Suppressed, HIV-1 Infected Subjects Aged ≥65 Years. Maggiolo F, ASST PG23, Rizzardini G, Sacco University Hospital, Molina J, Saint-Louis Hospital, Pulido F, Hospital Universitario, De Wit S, St Pierre University. Email: franco31556@hotmail.com.

Objective: As the proportion of older people living with HIV is increasing, it is important to study the long term safety and efficacy of antiretroviral therapy in older individuals, Bictegravir/Emtricitabine/Tenofovir Alafenamide (B/F/TAF) is a small single tablet regimen with few drug-drug interactions and a high barrier to resistance; it contains TAF resulting in less renal and bone toxicity than Tenofovir Disoproxil Fumarate (TDF)-based regimens. We evaluated the efficacy and safety of switching participants 65 years and older to B/F/TAF from Elvitegravir/Cobicistat/Emtricitabine/Tenofovir Alafenamide (E/C/F/TAF) or a TDF-containing regimen at 24 weeks. This study will follow participants for a total of 96 weeks.

Methods: Virologically suppressed (HIV-1 RNA <50 copies/mL) participants >65 years old who were currently receiving either E/C/F/TAF or a TDF-based regimen were switched to open-label B/F/TAF. Primary endpoint was HIV-1 RNA <50 copies/mL at Week(W) 24 as defined by the Food and Drug Administration (FDA) Snapshot algorithm.

Results: Of 86 participants, mean age was 70 years (range 65-80), 13% were female, and 99% were White; 91% (78/86) of participants were receiving E/C/F/TAF at baseline. At W24, HIV RNA < 50 copies/mL was 98% for B/F/TAF; 2 participants had no virologic data in window and there were no virologic failures. No Grade 3-4 study-drug related adverse events (AEs) were observed. Three AEs led to premature study drug discontinuation; one was study-drug related. There were no discontinuations of B/F/TAF due to a renal or bone AEs. Median changes from baseline in total fasting cholesterol, LDL, HDL, triglycerides and total cholesterol:HDL were -14, -7, -3, -17 mg/dL and -0.1, respectively. Median change from baseline in eGFR was -4.5 mL/min. Median percent change in urine beta-2microglobulin:creatinine and urine retinol binding protein:creatinine ratios were 20.8 and -15.6, respectively.

Implications/Conclusion: Through W24, high rates of virologic suppression were maintained in older participants who switched to B/F/TAF. The safety and efficacy data support the switch to B/F/TAF in virologically suppressed HIV-infected individuals aged ≥ 65 years.

199-Pilot Program of Medication Reconciliation in Patients with Human Immunodeficiency Virus Receiving Health Services at Community Pharmacy in Puerto Rico. Marrero-Serra C, University of Puerto Rico. Email: cathyria.marrero@upr.edu.

Objective: Pharmacist interventions have been shown to reduce the incidence of poly-pharmacy, improve adherence, and enhance therapeutic outcomes of patients with human immunodeficiency virus by educating them with regards to their medications, addressing their individual needs, and communicating with other health professionals to minimize medication discrepancies. Objectives: (1) To assess discrepancies between an outpatient HIV clinic medical record list of medications, the current medication list in the community pharmacy record, and patients' self-reported home medications (2) To identify Medication Related Problems (MRPs) in HIV positive patients over the age of 50 currently receiving treatment with ART by utilizing a pharmacist-conducted Medication Reconciliation Process (3) To evaluate the degree of acceptance of pharmacist interventions by HIV clinic medical staff.

Methodology: The study will follow a prospective, descriptive design. Patients will be identified to receive medication reconciliation as part of a pilot program of a new pharmacy service. The population to be targeted by this service will consist of current patients of PR CoNCRA ambulatory clinic who are 50 years of age or older that utilize the community pharmacy Farmacias Caridad to fill their prescription medications. The pharmacist will conduct a medication reconciliation intervention by reviewing the clinical medical record, pharmacy medication profile, and conducting a patient interview. The pharmacist will then document any inconsistencies between the two medical records and the patient's self-reported regimen, identify MRPs, and provide clinical recommendations to the healthcare team through written pharmacy progress notes in the medical record.

Preliminary Results: Research in progress.

Conclusions/Implications: We anticipate these results will contribute to a better understanding of the discrepancies which may exist between clinic and pharmacy medical records, and the pharmacists role in the medication reconciliation process and patient education.

200-Assessment of Needs for the Anticipated Cabotegravir (CAB) and Rilpivirine (RPV) Long-Acting Injections (LAIs) (CAB/RPV LAI) in Treatment of HIV. Ngo S, Cook I, Johns Hopkins Home Care Group. Email: susan_ngo@med.unc.edu.

Objective: This study aims to evaluate healthcare providers' (HCPs) perspective towards the anticipated Cabotegravir LA and Rilpivirine LA injection (CAB/RPV LAI) for the treatment of HIV. CAB/RPV LAI is a long-acting intramuscular monthly injection that have shown non-inferiority in efficacy and safety profile compared to the standard three-drug daily oral antiretroviral regimens in HIV treatment for up to 48 weeks. While study participants have indicated a general satisfaction towards utilizing a monthly injection, there remains a gap in understanding HCPs perspective towards the emerging therapy.

Methods: This descriptive study was performed at a large, ambulatory infectious disease clinic located at an urban academic medical center. HCPs were invited via email to complete an anonymous survey over a three-week period. Survey assessment included HCPs' perception on predicted use among their patients and anticipated challenges regarding the injection. Logistical challenges (additional documentation, changes in current workflow, following up with patients, availability of space, availability of clinic employee, and patient wait time) and clinical concerns (incorrect injection administration, patients not following up with routine injection, medication adverse reaction, injection site related adverse reactions, and drug interactions) were assessed using a four-point Likert scale ranging from significantly challenging to not challenging at all and from significantly concerned to not concerned at all, respectively. HCPs were also able to provide additional free text comments regarding challenges. Data were analyzed using descriptive statistics.

Results: Forty-five participants completed the survey: mean years of experience was 15.6 (9.7 SD), 95.5% had heard of the CAB/RPV LAI prior to completing the survey, 68.8% were providers, 13.3% were nurses, 11.1% were pharmacists, and 6.7% identified as others. When asked who they felt comfortable administering CAB/RPV LAI, 97.8% selected nurses, 84.4% selected pharmacists, 73.3% selected providers, and 71.1% selected certified medical assistants. Respondents felt most comfortable with the injection being administered in the clinic or pharmacy setting (100% and 91.1% respectively) versus the patients' home (51.1%). Logistical challenges most frequently anticipated to cause significant to some challenge among HCPs were following up with patients to complete induction phase (82.2%), following up with patients for initial loading and maintenance dose (75.6% and 71.1% respectively), patient wait times (62.2%), changes in current work flow (60.0%), availability of clinic employees (46.7%), additional documentation (37.8%), and availability of clinic space (35.6%). Clinical concerns that caused significant concerns among HCPs were patients not following up with routine monthly injection (95.6%), drug interactions (60%), medication adverse reactions (55.6%), injection site related adverse reactions (55.6%), and incorrect administration technique (42.2%).

Implications/Conclusions: HCPs indicated comfort with patients receiving CAB/RPV LAI by nurses or pharmacists in the either the clinic or pharmacy setting. Following up with patients regarding induction phase, initiation of loading dose, and continuing maintenance dose were selected as large logistical challenges and should be the focus of process planning for healthcare facilities planning to provide CAB/RPV LAI. Building solid patient care processes to address these logistical challenges will also help address the

largest clinical concern of patients not following up with routine monthly injection.

201-Long-Term Efficacy and Safety of Bictegravir/Emtricitabine/Tenofovir Alafenamide (B/F/TAF) in Art-Naïve Adults. Orkin C, Barts Health NHS Trust, Gandhi-Patel B, Brainard D, Collins S, Martin H, Gilead Sciences, Sax P, Brigham and Women's Hospital, Arribas J, Hospital Universitario La Paz, Gupta S, Indiana University, Martorell C, The Research Institute, Stellbrink. Email: chloe.orkin@bartshealth.nhs.uk.

Objective: To evaluate comparative efficacy and safety of B/F/TAF and dolutegravir (DTG)-containing regimens through 144 weeks (W).

Methods: We conducted two randomized, double-blind, active-controlled phase 3 studies of B/F/TAF in treatment-naïve adults living with HIV. Study 1489 randomized HLA-B*5701-negative adults without HBV to receive B/F/TAF or DTG, abacavir, and lamivudine (DTG/ABC/3TC). Study 1490 randomized adults to B/F/TAF or DTG + F/TAF. Participants were pooled into three groups: B/F/TAF (Studies 1489, 1490), DTG/ABC/3TC (Study 1489), and DTG + F/TAF (Study 1490). A pre-specified pooled analysis at W144 assessed efficacy as the proportion with HIV-1 RNA <50 c/mL (FDA Snapshot) and safety; proteinuria and bone mineral density (BMD) were measured in 1489 only.

Results: 1274 adults were randomized/treated (634 B/F/TAF, 315 DTG/ABC/3TC, 325 DTG + F/TAF), 89% male, 33% Black. Baseline characteristics were similar across groups. At W144, 82% on B/F/TAF, 84% on DTG/ABC/3TC, and 84% on DTG + F/TAF achieved HIV-1 RNA <50 c/mL. No participant developed resistance. The proportion with drug-related adverse events of any grade was 26% (B/F/TAF), 42% (DTG/ABC/3TC), and 29% (DTG + F/TAF). Adverse events led to discontinuation for 1% (B/F/TAF), 2% (DTG/ABC/3TC), and 2% (DTG + F/TAF). Changes in eGFR at W144 were similar across groups. In Study 1489, comparing B/F/TAF to DTG/ABC/3TC, changes in proteinuria and renal biomarkers were similar and mean percentage change from baseline in hip and spine BMD by DXA at W144 were similar. Small treatment differences in changes from baseline in fasting LDL, HDL, and TC:HDL ratio were observed with B/F/TAF vs DTG/ABC/3TC but not vs DTG + F/TAF.

Conclusion: Through 3 years of follow-up in ART-naïve adults, use of B/F/TAF resulted in high rates of virologic suppression through W144. B/F/TAF was well tolerated, had fewer drug-related adverse events compared with DTG/ABC/3TC, and no clinically relevant effect on bone and renal safety or fasting lipids.

202-Switching to a Single-Tablet Regimen Bictegravir, Emtricitabine, and Tenofovir Alafenamide (B/F/TAF) from Dolutegravir (DTG) Plus Emtricitabine and Either Tenofovir Alafenamide or Tenofovir Disoproxil Fumarate (F/TAF or F/TDF). Sax P, Harvard Medical School, Luetkemeyer A, University of California-San Francisco, Rockstroh J, University of Bonn, Yazdanpanah Y, Assistance Publique des Hôpitaux de Paris, Trottier B, Clinique de Medecine Urbaine, Brainard D, Pritchard B, Martin H, Gilead Sciences. Email: barbara.pritchard@gilead.com.

Objective: The single tablet regimen B/F/TAF, is a guideline-recommended treatment for HIV-1. We evaluated whether people receiving dolutegravir (DTG) plus F/TAF or F/TDF can safely and effectively switch to B/F/TAF.

Methods: In this phase 3, double-blinded study, we randomized (1:1) virologically suppressed adults on DTG plus either F/TAF or F/TDF to switch to B/F/TAF or DTG+F/TAF, once daily with matching placebo. Documented or suspected prior resistance to NRTIs (i.e., M184V, K65R and thymidine analogue mutations [TAMs]), NNRTIs and/or PIs was permitted; known INSTI-resistance was exclusionary. Primary efficacy endpoint was the proportion with HIV-1 RNA ≥50 c/mL at Week (W) 48 (FDA snapshot). Noninferiority was assessed through 95% confidence intervals (CI) using a margin of 4%. Secondary efficacy endpoints were the proportion with HIV-1 RNA <50 c/mL and change from baseline in CD4 counts at W48. Safety was assessed by adverse events [AEs] and laboratory results.

Results: 565 participants were randomized/treated (B/F/TAF n=284, DTG+F/TAF n=281): 14% women, 23% Black, median age 51 years (range 20-79), 24% had resistance to NRTIs including 5% with K65R or ≥3TAMs, and 14% with M184V/I with or without other mutations. At W48, 0.4% on B/F/TAF and 1.1% on DTG+F/TAF had HIV-1 RNA ≥50 c/mL demonstrating noninferiority. No participant with NRTI-resistance had HIV-1 RNA ≥50 c/mL at W48. Overall, 93% on B/F/TAF and 91% on DTG+F/TAF had HIV-1 RNA ≤50 c/mL. Change in CD4 was similar between groups (p=0.23). The most common AEs were nasopharyngitis, diarrhea, and upper respiratory tract infection. Few discontinued study drug due to AEs; 6 (2%) in each group. Conclusion: At W48, switching to B/F/TAF was noninferior to DTG+F/TAF, with high rates of virologic suppression in both treatment arms. The single-tablet regimen B/F/TAF is a safe, effective option for people virologically suppressed on DTG+F/TDF or F/TAF, including individuals with pre-existing resistance to NRTIs including M184V, K65R and TAMs.

203-Assessment of Weight Gain Associated with TAF-Based HIV Combination Drugs in a Community Clinic. Sime Toundji C, Mosley H, Ware K, South University. Email: simecoretta@gmail.com.

Objective: Management of persons living with HIV has evolved over the past three decades. However, tenofovir alafenamide (TAF) is a newer HIV medication which has reportedly been associated with increased weight gain. The purpose of this study is to assess degrees of weight gain in patients taking TAF -based drug products from baseline to at least six months after being on therapy. A secondary outcome is to compare the differences in body mass index (BMI) from baseline to at least six months later between males and females on TAF-based drugs.

Methods: The institutional review board approved this retrospective study within a single clinic location in a suburban city in the Southeastern Region of the United States. The data of interest of people taking TAF-based regimens included age, gender, weight (in pounds), and height (in inches). A paired t-test provided statistical analysis of pre-and post -BMI measurements at baseline (prior to the prescribing of any TAF -based HIV combination products) and at least six months after therapy initiations. Any treatment interruptions and restarts during the six-month period behaved as continuous therapy for data analysis purposes. The study design did not take into account alternate medications that may have influenced increases or decreases in weight gain in the context of TAF-based medications. Study exclusions included patients on medications that were non-TAF based drugs at any point in their therapy history. An independent samples t-test compared the dependent variable, BMI, between two groups of independent variables, female and male. A record was made of mean changes and standard deviations associated with BMI readings for males and females. Statistical significance was associated with $p<.05$.

Results: Random selection of 60 patients from an electronic health system at the Southeastern region local community clinic took place. Of this total, subsequent exclusion of four patients (6.7%) occurred due to perceivably being out of care. Of the remaining 56, an exclusion of 12 more patients (21.4%) took place attributed to these persons not receiving TAF-based regimens at all during their courses of therapy. There were 16 females and 28 females that comprised the remaining 44 patients in the study. The average BMI value at baseline and six months on TAF-based therapy was 29.16 and 29.62, respectively. The range of BMI values at baseline and six months on TAF-based therapy was (16 to 64.8) and (17.4 to 70.1), respectively. The mean change in BMI from baseline to at least six months after TAF-based therapy was .623, S.D. 2.96, also not reaching statistical significance, 95% CI (-.276, 1.52), $p = .170$.

Conclusion: Results of this study did not support the hypothesis that TAF-based drugs were associated with increased weight gain from baseline to six months into therapy. A host of factors including diet, lifestyle, co-morbid conditions, and medications that lead to weight gain and weight loss confounds the results seen here. Additional investigations along these lines are prone to control for other medications that the patients are taking along with various lifestyle factors.

204-Evaluating Pharmacist Preparedness to Administer Long-Acting Injectable Antiretroviral Treatments in the Community Pharmacy Setting. Soni D, Melissen P, Abrahams B, Pepe G, Albertsons Pharmacy, Min A, Grover A, Temple University. Email: dsoni@mail.usciences.edu.

Objective: The primary objective of the study is to evaluate the preparedness of pharmacists, who have experience administering intramuscular (IM) treatment, to inject long-acting antiretroviral therapy (LAI-ART) in the community pharmacy setting. The secondary objective is to identify preferred training methods for pharmacists injecting LAI-ART in the community pharmacy setting. The first ever LAI-ART is a combination of the Integrase Strand Transfer Inhibitor (INSTI) cabotegravir (CAB) and the Non-Nucleotide Reverse Transcriptase Inhibitor (NNRTI) rilpivirine (RPV) that is administered intramuscularly in the gluteus medius once a month. LAI-ART would replace a patient's oral antiretroviral therapy (ART), decreasing pill burden for patients and increasing the potential for medication adherence. Medication adherence is highly important for patients living with Human Immunodeficiency Virus (HIV) to suppress the viral load and preserve immune function. Nonadherence can lead to disease progression, treatment failure and increased healthcare costs such as hospitalizations and medical visits. With the anticipated arrival of LAI-ART, it is important to assess if pharmacists are prepared to administer LAI-ART in a community pharmacy setting. Because specialized training is needed to administer injections in the gluteus medius, it is important to identify preferred training methods for administering LAI-ART.

Methods: A nationwide anonymous electronic survey will be distributed to Albertsons pharmacists in 17 states using Albertsons companies email listservs. The survey will consist of multiple-choice, yes/no, and Likert scale questions. The survey will include the following sections: (1) demographics, (2) preparedness to administer LAI-ART in community setting, and (3) preferred training methods. The pre-testing of the survey will be conducted in a small group of New Jersey licensed pharmacists, since they will not be part of the study population. The participants will be asked for feedback based on design and content of the questions. The feedback will be incorporated in creating a final survey which will be sent to the study participants. Albertsons pharmacists with active pharmacist licensure in their respective states, permission to administer medication and who have experience with administering IM treatment other than immunizations will be surveyed. Upon IRB approval, the intended timeframe to collect the online survey data will be from October 1, 2019 to December 31, 2019. Reminder emails will be sent biweekly during this timeframe to complete the survey. Survey questions will address injection technique, standard precautions, workflow and store characteristics, as well as preferred training methods for administering medication in the gluteus medius. Participant responses will be reviewed by the investigators to assess if study objectives are met. Descriptive statistics will be used to analyze survey data. The intended timeframe to complete data analysis will be by January 2020.

Preliminary/Final Results: N/A.

Conclusions/Implications: N/A.

205-Safety and Efficacy of Switching from Tenofovir Disoproxil Fumarate to Tenofovir Alafenamide in People with HIV Aged 50 Years and Older. Stellbrink H, University of Hamburg, Gandhi-Patel B, Zhong L, Das M, Temme L, Moupali D, Gilead Sciences, Post F, King's College Hospital, Podzamczer D, Hospital Universitari de Bellvitge, Arribas J, Hospital La Paz., Molina J, Saint-Louis Hospital, Orkin C, Barts Health NHS Trust, Rockstroh J, University of Bonn, Waters L, Central and Northwest London NHS Trust. Email: stellbrink@ich-hamburg.de.

Objective: To compare the safety and efficacy of switching from tenofovir disoproxil fumarate (TDF) to tenofovir alafenamide (TAF) in people with HIV (PWH) aged ≥50 years.

Methods: We pooled data from five phase 3 randomized controlled trials evaluating switching from TDF to TAF-containing antiretroviral regimens. Virologic suppression was defined as the proportion of participants with HIV RNA <50 copies/mL at 48 weeks using the Snapshot algorithm. Renal and bone impact were assessed at week 96 by eGFR (Cockcroft-Gault), β2M:Cr and RBP:Cr ratio, and bone mineral density (BMD) by DXA.

Results: Pooled analyses included 1,408 PWH aged ≥50 (768 TAF, 640 TDF). Median age was 54 years; 86% were male, 20.6% were black, 14.9% were Hispanic or Latino/Latina. Baseline medical conditions included hyperlipidemia (48.8%), hypertension (38.7%), diabetes (8.4%), and cardiovascular disease (5.9%). Virologic suppression was maintained in 94.1% of participants taking TAF and 93.5% of participants taking TDF (p=0.86). Study drug-related adverse events occurred in 16.2% of participants taking TAF and 12.3% of participants taking TDF, leading to discontinuation in 0.5% and 2.2% respectively. Median eGFR increased in participants on TAF and decreased in those on TDF. Markers of proximal renal tubular dysfunction (β2M:Cr and RBP:Cr) decreased in participants taking TAF and increased in those taking TDF. There were 2 cases of Fanconi syndrome in participants taking TDF and none in those taking TAF. Participants taking TAF had improvements in hip and spine BMD, while those taking TDF remained stable or worsened. The frequency of osteoporosis decreased in participants taking TAF and increased in those taking TDF.

Conclusion: In PWH aged ≥50, switching to TAF from TDF maintained virologic suppression and was associated with improved markers of renal function and improved BMD compared to TDF. These findings suggest that TAF is a safe and effective option for aging PWH.

206-CCR5 Targeted Tenofovir Alafenamide and Dolutegravir-Loaded Nanoparticle: Dual Protection for Human Immunodeficiency Virus (HIV) Functional Cure. Sunagawa S, Mandal S, Prathipati P, Creighton University School of Pharmacy and Health Professions, Destache C, Creighton University School of Pharmacy and Health Professions and Medicine. Email: shawnalynsunagawa@creighton.edu.

Objective: Human immunodeficiency virus (HIV) is a chronic disease with 37.8 million people worldwide infected. patients required life-long antiretroviral (ARV) drugs to treat hiv. presently, with diminishing hiv cure possibility, long-acting “functional cure” treatment may be beneficial for hiv-infected patients. the goal of this research is to design and evaluate in vitrO, a novel targeted nano-formulation combining a hiv-prone cell targeting antibody (ccr5) to blocking hiv entry and antiretroviral (arv) drugs to prolong arv protection, a dual protection against HIV infection. the rational is to introduce a strategy that promotes “functional cure” probability in HIV positive patients.

Methods: CCR5 targeted tenofovir alafenamide and dolutegravir (TAF+DTG) loaded nanoparticles (NPs) were synthesized based on a novel fabrication method and conjugating anti-CCR5 monoclonal antibody (XFCCR5 mAb, a KEY T-cell surface target of HIV-1), to the NHS functionalized TAF+DTG loaded NPs. The % encapsulation efficiency (%EE) of the XFCCR5-TAF+DTG NP was evaluated by HPLC analysis. The comparative specific binding affinity of XFCCR5-TAF+DTG NP to CCR5+ CD4+ TZM-BL CELL LINE AND CCR5+ POPULATION IN PBMCS was evaluated by flow cytometry analysis. The HIV protection group (activated PBMCs 105 cells/well) were treated and infected with M5 tropic HIV viruses, (HIV-1ADA:MOI:0.1) FOR 24 HOURS) to determine IC50 results. XFCCR5-TAF+DTG NPS, XFCCR5 blank NPS and naïve XFCCR5 MAB WERE evaluated FOR IC50 levels. All experiments were performed on three independent donors at three different time and data was statistically analyzed by graphpad prism 8 software.

Results: XFCCR5-TAF+DTG NPs obtained were uniformly (PDI: 0.153) sized 212.6 ± 20.7 nm with 3.7 ± 0.52 µg XFCCR5 mAb bound per mg TAF+DTG NP (mean±SEM, n=3). The % entrapment efficiency of DTG and TAF was 35.3 ± 2.9% and 41.7 ± 2.5%, respectively. The specific binding affinity (Km) of XFCCR5-TAF+DTG NP and XFCCR5 mAb with TZM-bl cells were estimated to be respectively ~100 and ~10 times higher binding efficacy compared to wild-type anti-CCR5 mAb, respectively. Intracellular DTG concentration maximum (Cmax) with NP averaged 100 times higher concentrations compared to naïve solution. DTG elimination T1/2 WAS 86.16 hours with NP and 17.95 hours with solution. Finally, the 4-day HIV protection results demonstrated significantly lower IC50 (XFCCR5-TAF+DTG NP 0.0352 ± 0.0086 nM and XFCCR5 NP 0.547 ± 0.01 nM) compared to 18.53 ± 2.85 nM for XFCCR5 mAb ($P < 0.05$).

Conclusion: The study results support Treatment of HIV at in vitro level with dual ARV NPS linked to a monoclonal antibody. Presumably, this novel technique could be a supportive immune-alternative to achieve ‘functional-cure’ against HIV-infection.

207-The Impact of a Pharmacist-led Educational Program on the Knowledge of Undergraduate College Students about Pre-Exposure Prophylaxis. Taliaferro T, Safeway/University of Maryland, Tran D, University of Maryland School of Pharmacy, Banjo O, Kim E, Safeway, Seung H, University of Maryland, Hamper J, Albertsons. Email: Tiffany.Taliaferro@albertsons.com.

Objective: District of Columbia (DC) residents have a 1 in 13 chance of contracting human immunodeficiency virus (HIV), which is the highest risk of acquiring HIV in the United States. In 2017, 41% of new HIV diagnoses occurred in persons aged 13-24 years old in Washington, D.C., versus the national average of 20% among this age group. College students are at an increased risk of acquiring HIV infection due to risky sexual behaviors and their lack of knowledge about HIV prevention and pre-exposure prophylaxis (PrEP). To tackle this epidemic, the DC government has initiated a plan to reduce infections by increasing education and PrEP prescribing. Currently there are no studies evaluating a pharmacist-led educational program on PrEP targeted toward college students. The primary objective of this study is to evaluate the impact of a pharmacist-led educational program on the knowledge of college

students about PrEP. The secondary objectives include determining students' knowledge of PrEP prior to the educational program, assessing the educational program's impact on students' willingness to start PrEP, and evaluating students' perception of their knowledge versus actual knowledge of PrEP.

Methods: This is a cross-sectional, pre-and post-survey study. The inclusion criteria include undergraduate students 18 years or older at a university in DC. Individuals who self-report as graduate students or not enrolled at the university will be excluded. The research team will advertise the educational program and study by contacting student organizations, health center, student-union and dormitories. A pharmacist will deliver a thirty-minute educational program to student participants in multiple group sessions. Participants will complete an anonymous pre-survey to assess their baseline knowledge of HIV risk factors, HIV prevention, PrEP, and their willingness to start PrEP, if indicated, prior to the educational program. The survey will also collect demographic information and medication beliefs to identify barriers to starting medications. The program will discuss HIV prevention strategies, PrEP, baseline exams, and methods to obtain PrEP. After the program, participants will complete a post-survey evaluating HIV risk factors and prevention, knowledge of PrEP and willingness to start PrEP, if indicated, to assess changes from baseline responses. A unique identifier will match pre-and post-surveys. The target number of completed pre-and post-surveys is 100. Surveys will be piloted with students of the same age range as the target population. Descriptive statistics will be used to analyze the survey data. Paired t-test or Wilcoxon signed-rank test will be used to assess the impact of the program on participant knowledge. In addition, the association of the post survey according to demographic characteristics will be analyzed using ANOVA or Kruskal-Wallis test. This study is currently under review by the Institutional Review Board at the University of Maryland School Of Pharmacy.

Preliminary Results: Results in progress.

Implications/Conclusions: A pharmacist-led educational program at a university in D.C. may increase students' knowledge on HIV risk behaviors, HIV prevention and PrEP. Results will evaluate participant's knowledge, and their willingness to start PrEP, and will be used to guide further initiatives to positively impact targeted population.

208-Impact of a Clinical Pharmacist on Adjuvanted Recombinant Zoster Vaccine Vaccination Rates in People Living with HIV Age 50 Years or Older. Tang A, Celario V, Walgreens, Jimenez H, Sturgill M, Rutgers Ernest Mario School of Pharmacy. Email: andy.tang@walgreens.com.

Objective: Zoster (herpes zoster or shingles) is a painful and occasionally debilitating conditions resulting from the reactivation of a latent varicella-zoster virus (VZV) infection. When VZV resurface after initial infection, VZV is thought to infect dendritic cells in nasal pharyngeal mucosa, which migrate to draining lymphoid tissues and transmit the virus to CD4 (helper) T cells. Then the infected T cells transmit the virus to the skin, infecting dermal fibroblast, keratinocytes, and endothelial cells. Immune compromise, in particular the age-related decline in T cell-mediated immunity, is the most firm established risk factor for VZV reactivation: It is therefore not surprising that the incidence of herpes zoster is increased in individuals older than age 60 years, and in patients with human immunodeficiency virus (HIV-1) infection. People living with HIV, 50 years of age or older may represent a particularly high-risk population for reactivation of latent VZV. Antiretroviral therapy (ART) is proven to restore normal CD4 counts and decrease disordered T cell activation, but CD4 T cell proliferation does not return to pre-infection levels. Additionally, ART cannot prevent the continual activation of innate immune cells (monocytes, dendritic cells, and natural killer cells) associated with HIV infection, which over time can lower the population of innate immune cells, thereby compromising both innate and adaptive immunity. Shingrix (Zoster Vaccine Recombinant, adjuvant; GlaxoSmithKline) was approved by the FDA in 2017 for the prevention of herpes zoster in patients greater than 50 years of age. Shingrix is considered safe for immune compromised patients. The most common adverse events were pain, erythema, and swelling at the injection site. The only contraindication for Shingrix is hypersensitivity to any of the vaccine components. The primary endpoint is to determine Shingrix vaccination rate in HIV patients over 50 and controlled on ART following 6 months of scheduled clinical pharmacist intervention in the outpatient HIV clinic. Secondary endpoint is comparing the vaccination rate with clinical pharmacist intervention to the previous 6 months, in the same outpatient HIV population without intervention.

Methods: Patients meeting inclusion and exclusion criteria will be approached by study personnel during regularly scheduled clinic appointment. Study personnel will educate patients on the importance on getting Shingrix. If the patients meet inclusion and opts in, a consent form will be reviewed. After, the study personnel will schedule the two-dose Shingrix vaccination series at month 0, then at month 2-6 at the patient's requested pharmacy. Confirmed administration call will follow 2 weeks after each scheduled vaccination. The study personnel will follow up with the patient up to 6 months. -Inclusion: Age 50 years or older; established, documented diagnosis of HIV infection; currently receiving antiretroviral therapy -Exclusion: Age younger than 50 years; No documentation of HIV infection; Not currently receiving ART or just initiating ART; History of allergic or severe reaction to any vaccination. Preliminary/Final

Results: Reports in Progress.

209-Tenofovir Alafenamide vs Tenofovir DF in Women: Pooled Analysis of 7 Clinical Trials. Thompson M, AIDS Research Consortium of Atlanta, Brar I, Henry Ford Medical Group, Brinson C, Central Texas Clinical Research, Creticos C, Howard Brown Health Center, Hagins D, Chatham County Health Department, Koenig E, Instituto Dominicano de Estudios V. Email: drmt@mindspring.com.

Objective: Globally, the majority of people living with HIV are cis-women, who are underrepresented in clinical trials. Tenofovir alafenamide (TAF) has demonstrated an improved renal and bone safety profile relative to tenofovir disoproxil fumarate (TDF) in

multiple randomized trials with similar efficacy. To evaluate the efficacy and safety of TAF vs. TDF for ART initiation or switch in women, seven studies were pooled.

Methods: Data from 779 cis-women in 7 randomized, double-blind clinical trials (2 in treatment-naïve adults, 5 in virologically suppressed adults) through W96 were analyzed. All participants who initiated or switched to TAF-based regimens (elvitegravir/cobicistat/emtricitabine [FTC]/TAF, rilpivirine/FTC/TAF, FTC/TAF, or bictegravir/FTC/TAF) were compared with those who initiated or continued TDF-based regimens. Virologic suppression (VS; HIV-1 RNA <50 c/mL) rates at W96 were determined by FDA snapshot analysis. Bone mineral density (BMD) and the renal tubular biomarkers urine beta-2-microglobulin (B2m):creatinine (Cr) ratio and retinol binding protein (RBP):Cr ratio are reported at W96. Differences were compared using Wilcoxon rank sum test.

Results: A total of 779 cis-women were enrolled (n=429 TAF, n=350 TDF). Participants were primarily women of color (67% black or Hispanic/Latina; 45% black and 25% Hispanic/Latina). Treatment-naïve women (WTN) had a median age of 37 years with median HIV-RNA 4.47 log10 c/mL and CD4 365 cells/mm3. Women with VS (WVS) had a median age 47 years with median CD4 711 cells/mm3. Of WTN, 86% (TAF) and 85% (TDF) achieved VS (p=0.71) at W96. VS was maintained in 86% of WVS switching to TAF and 85% continuing TDF (p=0.99). Overall TAF and TDF were well-tolerated. Discontinuation due to adverse event/death was 0% (TAF) vs. 1.6% (TDF) in WTN and 1.3% (TAF) vs. 2.2% (TDF) in WVS. At W96 there was less impact on renal biomarkers in WTN initiating TAF-vs TDF-based regimens (p<0.001), and decreases in BMD were smaller (p<0.001). Women switching from TDF to TAF experienced decreases in tubular proteinuria (p<0.001) and improvements in BMD (p<0.001) at W96.

Conclusions: Similar to the overall results in pivotal naïve and switch trials of FTC/TAF-based regimens, cis-women who initiated or switched to TAF had significantly improved bone and renal safety parameters compared to TDF, with similar rates of virologic suppression through W96. These pooled data from 7 studies demonstrate a safety advantage for initiating therapy with or switching to TAF compared to TDF in women.

210-Evaluating the Impact of an On-Site, Specialized Community Pharmacy on Clinic Retention and Medication Adherence in People Living with HIV. Vaughn C, Kissel J, Saltsman N, Equitas Health, Clark A, Equitas Health Pharmacy, Seifert J, PGY1 Community-based Program The Ohio State University Residency Program, Casper K, The Ohio State University College of Pharmacy. Email: vaughn.208@osu.edu.

Objective: The objective of this study is to determine the impact of proactive patient monitoring and individualized outreach retention efforts on clinic retention and antiretroviral adherence. The patient population being monitored are people living with HIV (PLWH) who receive care at an on-site, specialized, community pharmacy that is fully integrated with a Ryan White-funded HIV clinic. Many PLWH are able to control their HIV infection through consistent use of antiretroviral therapy (ART). Despite this, non-adherence to clinic appointments and ART remains an issue for a significant number of PLWH. This non-adherence regularly leads to rebounding viral loads, opportunistic infections, and drug-resistance. At the specialized community pharmacy, proactive patient monitoring includes initial assessment for all new PLWH, new ART regimens, and PLWH who are re-establishing care. An initial assessment will include a thorough review of disease state, counseling information, medication reconciliation, and general quality of life discussions. Reassessments occur every one to three months and ascertain the patient-reported adherence, side effects, changes in health, and outlook on regimen. Care plans are created as clinically relevant. Patient outreach is performed regularly to all patients with ART prescriptions that are ready to be dispensed, and to patients who become non-adherent to ART, and continues until the patient is contacted. When patient contact is made, the pharmacy staff schedules the patient with their provider to assess HIV infection control as appropriate. Previous data have shown pharmacist involvement in patient monitoring increases adherence to ART, and this study seeks to expand these findings.

Methods: This will be a retrospective review of data. PLWH who have their HIV infections managed by the clinic will be classified into two groups; those who fill their antiretroviral prescriptions with the on-site pharmacy and those who fill their antiretroviral prescriptions with off-site, external pharmacies. The primary outcome of clinic retention will be measured using missed appointments. A patient will be considered retained if they have had an appointment and missed fewer than two appointments both within the 7-month study period. These measures compare to validated retention metrics, align with internal definitions of retention, and qualify patients who may be seen every 6 months. Total number of missed appointments during the study period in excess of 2 will also be measured and compared between groups. Medication adherence will be measured using the proportion of days covered using medication fill history. Data will be collected using the internal electronic health record.

Results: Study in progress.

Implications: PLWH often have challenges with medication and appointment adherence that can lead to complications and inadequate care. This study hopes to identify methods community pharmacy may utilize to positively impact patient care for this higher risk patient population.

211-The incidence and severity of drug interactions before and after switching antiretroviral therapy to bictegravir/emtricitabine/tenofovir alafenamide in treatment experienced patients. Walshe C, Schafer J, Jefferson College of Pharmacy — Thomas Jefferson University. Email: Cxw138@jefferson.edu.

Objective: Switching antiretroviral therapy (ART) in virally suppressed patients living with HIV (PLWH) can simplify treatment, improve

tolerability, limit long-term toxicity, and reduce costs. Switching ART may also mitigate drug interactions (DIs) with concomitant medications (CMs) or lead to new interactions requiring intervention to maintain treatment efficacy and safety. Multiple studies have demonstrated that switching ART to bictegravir, emtricitabine and tenofovir alafenamide (BIC/FTC/TAF) is safe and effective, but none have assessed changes in the incidence and severity of DIs when patients switch to this regimen. Objective: The purpose of this study was to assess changes in the incidence and severity of DIs before and after ART switches to BIC/FTC/TAF.

Methods: Patient records from an urban HIV clinic in Philadelphia were evaluated for inclusion in this retrospective cohort study. Each patient had HIV infection and underwent ART switches to BIC/FTC/TAF between 3/2018 and 6/2019. Patients were also receiving at least one prescription CM at the time of the switch. This protocol was approved by the Institutional Review Board at Thomas Jefferson University. Using the University of Liverpool's HIV drug-interaction checker, two DI analyses were conducted per patient. The first assessed patients' pre-switch ART regimens with their CM list. The second assessed the same CM list with BIC/FTC/TAF. The result of each ART-CM assessment was placed into one of the following categories: "no interaction expected," "potential interaction," or "do not co-administer." These results were assigned numerical scores of 0, 1, or 2, respectively. The scores were summed to generate a total DI score for each patient pre-and post-ART switch. Median pre-and post-switch scores were then calculated for comparison. The primary outcome was the difference in the proportion of patients experiencing DIs before and after the ART switch as assessed by the McNemar test. The secondary outcome was the difference in DI scores before and after the ART switch as assessed by the Wilcoxon Signed Rank test.

Results: Ninety-five patients were included. The majority were African American (57%) and male (73%) with a median age of 54 years. Their median durations of HIV infection and ART were 12 and 9 years, respectively. Pre-switch, most patients were receiving regimens containing two nucleoside reverse transcriptase inhibitors plus either a protease inhibitor (20%), a non-nucleoside reverse transcriptase inhibitor (10.5%) or a non-bictegravir integrase inhibitor (63.2%). Aside from ART, patients were receiving a median of six CMs and nearly two-thirds had polypharmacy. Pre-switch, DIs were identified in 65 patients compared to 27 patients post-switch ($p< 0.0001$). The median DI scores pre-and post-switch were 1 (range 0, 10) and 0 (range 0, 3), respectively ($p<0001$). While most patients had only "potential interactions" pre and post-switch, eighteen had at least one DI classified as "do no co-administer" before switching to BIC/FTC/TAF compared to zero patients post-switch.

Conclusions: Switching ART to BIC/FTC/TAF decreased the incidence and severity of DIs in this sample of treatment experienced PLWH. Switching to BIC/FTC/TAF should be considered in eligible patients that are receiving CMs to reduce the risk of DIs.

212-Evaluation of annual rates of HIV diagnoses as it pertains to the quantity of HIV organizations featured within the states. Young H, Ware K, South University School of Pharmacy. Email: Heather_Young01@stu.southuniversity.edu.

Objective: Purpose: Initiatives devoted to the comprehensive care of persons living with the human immunodeficiency virus (HIV) are strategically placed throughout the world. Nationally, states contain a varying number of entities that assume these responsibilities. Perceivably, the amount of HIV organizations housed throughout an individual state is reflective of the needs of its respective constituents. The purpose of this study was to assess whether an association existed between the estimated number of HIV organizations and the diagnoses rates of persons living with HIV at the state level.

Methods: A retrospective analysis was performed using data from "TheBody.com – United States HIV Organizations" and "Center for Disease Control and Prevention – Diagnosis of HIV Infection, by area of residence, 2014 and 2015." Attempts were not made to verify the comprehensive nature of the list of state HIV organizations that was furnished. Reviews of the state HIV organizations did not include assessments of the programmatic functionalities. While the diagnoses of HIV infections were confined to calendar years 2014 and 2015, the timeframe of construction of the list of HIV organizations was not factored into the analyses. Pearson Correlation Coefficients were used to assess the strength and direction of the relationships between organizational quantity and HIV diagnoses in 2014 and 2015. Statistical analysis was determined a priori to be an alpha level of $p<0.05$.

Results: The number of HIV organizations, and corresponding rates of HIV diagnoses (2014 & 2015), per state, analyzed within the study ranged from 1 to 137 (mean = 10) and 1.3 to 64.3 (mean = 10.48) along with 1.7 to 57 (mean = 10.02), respectively. The locations with highest and lowest HIV diagnoses rates were District of Columbia (64.3 – 2014, 57 – 2015) and Idaho (1.3 – 2014, 2.4, 2015) respectively. The states with the most and least numbers of HIV organizations were Idaho, Kansas, Nebraska, North Dakota, South Dakota, and Wyoming (1) and New York (137). The amount of HIV organizations was shown to be positively correlated with the rates of diagnoses for 2014 and 2015 ($r = .185$, $r = .180$). The association between volume of HIV organizations nationally and the rates of HIV diagnoses for 2014 and 2015 did not yield statistical significance ($p = .19$, $p = .21$).

Conclusion: The presence of HIV organizations nationally demonstrated weakly positive associations with the rates of HIV diagnoses during the two years examined in this study. It was revealed that some states possess a vastly different amount of HIV organizations than their counterparts. Perhaps the presence of the positive correlations observed here speaks to the diligence and infrastructure that HIV organizations employ to diagnose persons living with HIV. The breadth and depth of HIV organizations vary considerably creating additional opportunities for pharmacy students and pharmacists to be more involved in the provision of HIV care.

Immunizations

214-The impact of integrating human papillomavirus (HPV) vaccine recommendations into combined oral contraception (COC)

counseling on vaccine uptake within a single grocery store community pharmacy. Davis T, West Virginia University/ Kroger, Shoemaker O, Kroger. Email: tyler.davis3@hsc.wvu.edu.

Objective: The objectives of this study are to: 1. Determine if integrating HPV vaccine recommendations into COC counseling changes HPV vaccine uptake. 2. Survey participants about their attitudes, beliefs, and knowledge of HPV, HPV vaccine, and HPV related cancers to determine predictors for HPV vaccine uptake. 3. Evaluate the change of correct responses on knowledge based questions after the pharmacist provided education.

Methods: This is a prospective, pre-and post-intervention study design comparing HPV vaccine uptake during an intervention period and similar periods of time from previous years. Eligible participants include those that are included in the CDC ACIP recommendations for the HPV vaccine, female, and are picking up COC prescriptions in the grocery store community pharmacy. Participants will be excluded if they are under 18 or over 26 years old, refuse pharmacist counseling, utilize the drive-thru for prescription pick up, or someone picks up a prescription on the participant's behalf. Participants will be identified during COC prescription processing for both refills and new prescriptions. The identification process includes an assessment of known vaccine history and identification of a COC prescription. A hard stop in the pharmacy's computer software system will be enacted at the point of sale requiring a pharmacist to offer to counsel the participant on their COC prescription, recommend the HPV vaccine, and enroll the participant into the study. If a participant accepts counseling and consents to study enrollment, the pharmacist will counsel the participant on their specific COC, recommend the HPV vaccine including providing an educational handout, and present a pre-survey for the participant to complete which includes questions about HPV, the HPV vaccine, and HPV related cancers attitudes, beliefs, and knowledge. The results of the counseling and vaccine recommendation will be recorded in the participant's prescription profile. Survey results will be stored separately following standard IRB protocol. Two weeks after the counseling session, the participant will be contacted by phone to complete a post-survey. The post-survey will ask if the counseling session impacted their decision to receive the vaccine, initiated conversations about HPV, the HPV vaccine, and HPV related cancers, and repeat the knowledge based questions from the pre-survey. This project will be conducted over a 3-month period. Data will be collected and analyzed using Microsoft Excel. Descriptive statistics, such as mean, median, and mode will be used to describe participant demographics. Comparative statistics will be used to determine the change in vaccine uptake, demographic predictors for vaccine uptake, and change in correct responses to knowledge-based questions.

Results: Research in progress.

Conclusions: Research in progress.

215-The impact of student pharmacists in helping patients overcome immunization barriers and improving adult immunization rates in South Florida pharmacies serving a predominantly Hispanic population. Diaz Y, Alvarez G, Pham H, Nova Southeastern University College of Pharmacy. Email: yd236@mynsu.nova.edu.

Objective: Background/Objectives: Vaccination is the most effective strategy for protection against vaccine-preventable diseases. However, many adults in the United States choose not to receive immunizations, whether it is due to safety concerns, lack of education, or other barriers. This leads to the yearly development of preventable diseases such as influenza, hepatitis B, shingles, and others. The purpose of this study is to identify immunization barriers among Hispanics in South Florida. We aim to discern the impact that student pharmacists can have in reducing these through educational interventions, and to improve adult immunization rates in pharmacies that serve a predominantly Hispanic population.

Methods: Pharmacy students will be trained to administer questionnaires and to conduct individual educational interventions in six community pharmacies located in South Florida. The expectation of the proposed study is to gather useful information about the short-term effectiveness and impact on immunization rates of a brief educational intervention performed by pharmacy students. Participants will be informed about the purpose of the study, explained that participation is voluntary, and given the opportunity to ask questions. Individuals will be eligible to participate if they are of Hispanic origin, 18 years or older, and able to understand and provide written informed consent. Documentation will be available in both English and Spanish, and the intervention will be conducted according to the participant's preference. A consent form will be explained to and signed by the participants. A brief questionnaire will be administered to the community pharmacy staff to assess barriers to immunization among providers. A separate questionnaire will be administered to Hispanic customers upon their arrival to the pharmacy to assess barriers to immunization among Hispanics. The administration of either questionnaire will take 5 to 10 minutes to complete. No personal identifiers will be collected. After collecting the document, trained pharmacy students will hold an educational intervention of no more than ten minutes about vaccine availability, effectiveness, and safety. Upon completion of the interactions and before leaving the site, a final questionnaire will be administered to the pharmacy staff to assess the short-term effectiveness of the intervention and to determine provider barriers to providing immunizations.

Preliminary/Final Results: N/A.

Conclusions/Implications: N/A.

216-Implementation of the MOTIVE Influenza Tool that Identifies and Educates Patients on Barriers to the Influenza Vaccine to Increase Vaccination Rates in an Independent Pharmacy Setting. Fisk B, Rocking Horse Community Health Center. Email:

beckyfisk5@gmail.com.

Objective: The Centers for Disease Control (CDC) estimated that during the 2017-18 influenza season 48.8 million people contracted influenza, 22.7 million people saw their healthcare provider, 959,000 were hospitalized and 79,400 deaths were caused by influenza. Influenza vaccination of adults during the 2017-18 season were 37.1% and 57.9% for children aged 6 months to 17 years. Influenza vaccination is recommended yearly for everyone 6 months and older by the CDC Advisory Committee on Immunization Practice (ACIP). Recently, we have seen a heavy increase in vaccine hesitancy, especially with regards to the influenza vaccine. Barriers to vaccination include concerns with insurance coverage, efficacy, allergies to vaccine components and safety of vaccine. As well as parental perceptions and concerns included vaccine safety, deciding when and how to immunize, vaccine efficacy and belief that natural healing provided more benefit than vaccination. The use of our standardized education tool will be beneficial to address the patient's vaccination concerns for their children, themselves and other adult patients. The primary objective of this study is to implement the utilization of a motivational interviewing focused educational instrument as a way to increase influenza vaccination rates in an independent community pharmacy. The central hypothesis is that with appropriate education on the safety and efficacy of influenza vaccination, vaccination rates, and patient understanding will increase.

Methods: This prospective, observational study will be conducted at an independent community pharmacy in Cedarville, Ohio. From September 30, 2019, through January 30, 2020, patients that come into the pharmacy to pick up a prescription or purchase over the counter products will be approached about receiving a flu vaccine. Patients coming in on Mondays/Thursdays will make up the control group and on Tuesdays/Fridays will be part of the intervention group. The MOtivational interviewing Tool to Improve Vaccine adherencE, (MOTIVE) tool will be utilized. The MOTIVE tool combines motivational interviewing with a discussion on vaccine safety and efficacy. The tool provides an easy to follow-stepwise approach to the conversation with a patient, starting with a presumptive statement. Then, if the patient verbalizes refusal or hesitation, as long as there are no medical contraindications, questions on the MOTIVE tool should be asked and answered as listed on the tool to identify concerns with the safety or efficacy of the vaccine. Pharmacists and student pharmacists will be trained on the utilization of the MOTIVE tool prior to data collection. Data points to be collected included the following yes/no questions: vaccine last influenza season, interested in vaccine today, education provided(intervention only), and vaccine received today. There will be no patient specific information collected. Demographics of age and gender will be collected retrospectively.

Results: IRB approval was received in September 2019. Data collection in progress.

Implications/Conclusions: The intended implication of this study is that vaccination rates throughout the community and knowledge about the safety and efficacy of influenza vaccines will both increase. As well as provide data to support the hypothesis that appropriate education on vaccine safety and efficacy will improve influenza vaccination rates.

217-Implementation of a Workflow Process to Address Pneumococcal Vaccinations in a College Health Setting. Flanagan S, Rhodes L, UNC Eshelman School of Pharmacy, Schimmelfing J, Selinger R, Sauls A, Campus Health Pharmacy, Marciniak M, UNC Eshelman School of Pharmacu. Email: sflanasb@email.unc.edu.

Objective: Pneumococcal bacteria causes thousands of infections annually in the United States, including meningitis, bloodstream infections, and pneumonia. The Centers for Disease Control and Prevention (CDC) recommends the pneumococcal polysaccharide vaccine (PPSV23) for persons with comorbidities such as asthma or diabetes, or for patients who smoke. Healthy People 2020 reported that only 24.3% of patients between the ages of 18-64 years who are indicated for PPSV23 had received one. Pharmacists practicing in the college health setting have the opportunity to ensure high-risk patients are educated and vaccinated against pneumococcal disease. The first objective of this project is to implement workflow changes to identify eligible patients and make PPSV23 recommendations in a college population. The second objective is to determine the effectiveness of the workflow changes, defined as the location where the vaccine is administered, the number of patients identified as eligible for PPSV23, the number of eligible patients who received a PPSV23 recommendation, and the number of administered PPSV23 doses.

Methods: This prospective study will occur at two community-based pharmacies in a college health setting. Eligible patients are those 19 years or older who are students, faculty, staff, or their dependents and are indicated for PPSV23, according to CDC recommendations (patients with chronic heart [excluding hypertension], lung, or liver disease; diabetes, alcoholism, or cigarette smoking). Patients will be excluded if they previously received PPSV23 or are not eligible for revaccination with PPSV23. This study will implement new workflow measures including: adding new questions to the current influenza vaccine questionnaire to simultaneously identify eligible persons for the PPSV23 vaccine, creating handouts to recommend PPSV23 for patients receiving prescriptions that may indicate a need for vaccination, and developing a process to recommend PPSV23 to patients when identified through the pharmacy profile as a part of other clinical services. Data will be tracked via a paper log that includes: location of vaccine administration, number of patients identified as eligible for PPSV23, number of recommendations provided for PPSV23, number of PPSV23 administered, and reasons for vaccine declination. On a weekly basis, the data will be de-identified and transferred to a password-protected Microsoft Excel file. Documentation of patient consultation will be added to the patient's pharmacy profile to prevent duplications in consultation attempts. Descriptive statistics will be utilized to evaluate data. The total number of PPSV23 vaccinations administered from 2015-2018 will be compared to those administered since the project start.

Preliminary Results: Institutional Review Board approval is anticipated in October 2019. Workflow implementation will begin in

November 2019, with data collection through February 2020.

Implications/Conclusions: To our knowledge, there are no published data evaluating pharmacist-provided PPSV23 recommendations to a college population. While this college health pharmacy has had success with influenza vaccine administration, PPSV23 has not been an area of focus. By adding pneumococcal vaccination outreach to their services, college health-based pharmacists have the opportunity to reach thousands of patients, ensure that high-risk patients are educated and vaccinated, and contribute positively to fill the void in published literature.

218-Assessing Barriers and Increasing Use of Immunization Information Systems in Pharmacies: A Randomized Controlled Trial. Hastings T, University of South Carolina, Ha D, Stanford Healthcare, Qian J, Fox B, Westrick S, Auburn University Harrison School of Pharmacy, Department of Health Outcomes Research and Policy, Lakin J, Auburn University College of Education, Department of Educational Research, Measurement, and Assessment. Email: hastint@mailbox.sc.edu.

Objective: Immunization Information Systems (IIS) are computerized databases that record immunization doses administered by participating providers. It is critical that each provider updates the IIS each time a vaccine is administered to ensure complete records. Participation in Alabama's IIS (ImmPRINT) is not mandatory; as a result, less than 25% of adults have immunization data recorded. Limited pharmacy participation may have contributed to this issue, as only 35% of pharmacists nationwide report entering vaccination information into their state IIS. Inadequate documentation of immunizations in the pharmacy setting results in duplicate vaccinations and jeopardizes patient safety. The objective of this study was to evaluate the impact of an IIS training program on pharmacists' awareness, knowledge, attitudes, intention, enrollment, and participation in ImmPRINT.

Methods: A randomized controlled trial was conducted among Alabama pharmacists practicing in independently owned pharmacies, who were providing vaccination services but whose pharmacy was not yet enrolled in ImmPRINT. Intervention pharmacists were offered a two-hour IIS training program, including an online article, demonstration videos, implementation guide, and informational flyer. Control pharmacists received only the informational flyer. Primary pharmacy-level outcomes, including enrollment and participation in ImmPRINT, were obtained from ImmPRINT administrative records. Enrollment was defined as pharmacy enrollment status in ImmPRINT, while participation was defined as the proportion of pharmacy doses administered that were subsequently recorded in ImmPRINT. Secondary outcomes, including awareness, knowledge, attitudes, and intention, were measured using self-reported surveys at baseline, one-month and three-months of follow-up after intervention. Two-way mixed ANOVA, Chi-square, and independent t-tests were used to analyze differences in outcomes between and within groups.

Results: A total of 41 participants completed the baseline survey. During the study period, 8 pharmacists were lost to drop out; 33 pharmacists (intervention=18; control=15) completed all three surveys. Intervention pharmacists' awareness was shown to be significantly greater than control pharmacists (p=0.028) at one-month (post-intervention). This difference was not observed at baseline. Further, the IIS training program was shown to significantly improve intervention pharmacists' knowledge (p=0.030) and attitudes toward IIS (p=0.016) over three months when compared to the control group. Enrollment in ImmPRINT was significantly greater among intervention pharmacists' pharmacies (p=0.035). Specifically, 59.1% of intervention pharmacies compared to 26.3% of control pharmacies were enrolled in ImmPRINT at three months. A total of 350 immunization doses were recorded in ImmPRINT by participants during the study period. No statistically significant differences were found between groups in terms of intention to enroll or participation in ImmPRINT.

Implications: As pharmacists become more involved in immunization efforts, awareness of and participation in responsible immunization documentation, including use of IIS, is critical to ensure appropriate immunizations are administered. This pharmacist-centered training program focused on practical strategies to integrate IIS into pharmacy workflow. Results show that pharmacists' awareness, knowledge, attitudes, and enrollment significantly improved as a result of this training. While this program contains some information specific to the Alabama IIS, it could be adapted and disseminated to other states, incorporating strategies to increase participation and improve sustainment of the intervention effect over time. ClinicalTrials.gov Identifier: NCT03796585

219-Impact of a Pharmacist-Led Intervention on Immunization Adherence Rates in High-Risk Adults. Henderson J, Walgreens Pharmacy, Liu Y, University of Missouri Kansas City. Email: jeffrey_henderson@outlook.com.

Objective: Vaccines are recognized as one of the most cost-effective preventable services available. Patients living with chronic health conditions (e.g., diabetes, chronic lung and heart disease) are at an increased risk of acquiring vaccine-preventable diseases; yet, adherence rates to ACIP recommended vaccines for these patient populations continue to go largely unmet. Community pharmacists, as effective and capable immunizers, are in prime position to identify, educate on, and offer timely administration of vaccination needs to this high-risk patient population. The purpose of this study is to evaluate the pharmacists' impact on improving adherence to ACIP recommended immunizations in high-risk adults by integrating an immunization assessment into daily pharmacist consultations for chronic care patients who are either starting therapy or adding on a new chronic medication to their therapy. The primary objective is to describe the implementation of an innovative immunization practice model into standard of care at two community-based, health-system specialty pharmacies. The secondary objective is to identify whether pharmacist-led immunization assessment interventions lead to increased adherence to ACIP recommended vaccinations in high-risk chronic care patients.

Methods: Eligible chronic care patients will be identified through the community pharmacy's new chronic medication daily call list. A pharmacist, or pharmacy intern, will utilize the Missouri Department of Health and Senior Services IIS, ShowMeVax, the patient's

medication use profile, and the pharmacy's immunization assessment form to review the patients' health and immunization history and determine vaccination needs. During the new chronic medication consultation call, the pharmacist, or pharmacy intern, will inform and educate the patient on vaccines they are indicated for and offer to schedule an appointment for vaccination. Reasons for declination, or deferment until a later date, will be documented. Regardless of the acceptance or declination of recommended immunizations, all patients will be offered an up-to-date immunization record to either be mailed out or provided to them during their immunization administration appointment. Additionally, patients who decline or defer will be offered a written summary of recommended vaccines along with vaccination information sheets to be mailed to them, as well as a follow-up immunization consultation call in 1-3 months, if desired. Data collection will include patient demographics, number of completed immunization assessment forms, time to complete each immunization assessment, number of unmet vaccination needs identified, number of unmet vaccination needs resolved, type and number of immunizations administered, and reasons for refusal or deferment. Descriptive statistics will be used to analyze the data and the results will be used to improve existing immunization services offered at the pharmacy.

220-The Unrealized Potential of Pharmacy-based Immunization Services: Does the Community Pharmacy Field Have a Clear Vision of Its Priorities. Kulczycki A, University of Alabama at Birmingham, Shewchuk R, University of Alabama at BIrmingham, Grubbs J, Publix Super Markets, Inc.,, Hogue M, Loma Linda University, Rothholz M, American Pharmacists Association (APhA). Email: andrzej@uab.edu.

Objective: Community pharmacies have recently become a common access point for adult immunizations, yet immunization rates remain sub-optimal. Less well documented, however, are pharmacy-related obstacles to addressing patients' immunization needs. This study examined the practice patterns of regularly immunizing community pharmacists and their perspectives about such service delivery to assess factors that may account for why they have not yet been able to more fully address the substantial unmet needs in immunization coverage that still exist.

Methods: We developed and pre-tested a questionnaire electronically administered to a sample of pharmacists maintained by the APhA Respondents were asked about their professional and practice characteristics, the importance attached to immunization in their practice, and the utility of corporate goals, feedback and incentives. Additional questions inquired about self-reported immunization volumes, patterns of time use, perceptions of time spent on the immunization process, attitudes toward immunization and workplace resources facilitating immunization. Pharmacists were also asked about their confidence in completing different steps of the immunization delivery process, as reflected in the HHS National Vaccine Advisory Committee (NVAC) Adult Immunization Practice Standards, and how comfortable they were performing key immunization tasks. Systematic descriptive analyses of survey responses were performed using Qualtrics.

Results: A nationally representative sample of 489 eligible responses from chain community pharmacists engaged in year-round immunization was obtained. Nearly all (94%) pharmacists had completed continuing education (CE) to update their immunization knowledge. There was much variability in how community pharmacists allocated time to immunization activities, the importance they attached to such services, perceived clarity and value of corporate messaging, and approaches used to promote them. During the flu season, pharmacists spent on average 29% of their day addressing all aspects of the immunization process, compared to 12% in non-flu season. Overall, 29% of community pharmacists viewed immunization as more important than their other pharmacy responsibilities. Only 41% considered corporate immunization goals reasonable; just 25% found corporate feedback motivating; and only 35% said incentives encouraged them to improve their immunization volumes. Pharmacists generally reported confidence in executing most key immunization tasks, but only 29% were confident that patients' complete immunization needs were assessed at every patient encounter and 46% were confident that their patients received strong vaccine recommendations. Pharmacists also held mixed views on the effectiveness of their immunization resources.

Conclusions/implications: Pharmacists reported having good knowledge on immunization, but major process barriers to improving pharmacy-based immunization services were identified. Most pharmacists were not confident about adhering to two key NVAC standards. Despite corporate-driven messaging to raise the importance of vaccines, pharmacists viewed corporate and other initiatives used to advance immunization services as somewhat underwhelming, with time and staffing pressures limiting their ability to fully evaluate and immunize patients. Deep foundational issues need to be tackled first to make fixes proposed to date more effective. These findings, along with the changing realities of pharmacy practice and of its business model, call for a more coherent vision to optimize services that can address the still substantial unmet needs in immunization coverage that exist.

221-Assessing Awareness of Meningitis B Vaccination in College Students. Lemay V, University of Rhode Island, Chapdelaine H, Mangona E, University of Rhode Island College of Pharmacy. Email: glemay@uri.edu.

Objective: Meningococcal disease, caused by the bacterium Neisseria meningitidis, is a severe, life-threatening illness. The incidence of fatality is estimated as high as 10%–20% among those infected with another large percentage developing life-altering sequelae, such as amputations and seizures. In the United States, the incidence of meningococcal disease has decreased, largely due to the requirement to the vaccine for serogroups A/C/W/Y (Menactra). Currently, serogroup B is the predominant serogroup resulting in more than half of meningococcal disease cases among 16-20 year olds. College students are at increased risk of contracting MenB compared with other adolescents and young adults who do not attend universities in the United States primarily due to their close living arrangements where they cohabitate in dormitories and study in common areas. Vaccination is a key strategy to prevent

transmission of meningococcal disease. The objective of this study was to assess college students' and faculty's knowledge of meningitis, provide educational detailing on the disease and vaccine, and subsequently increase MenB vaccination rates among at-risk college students.

Methods: Pharmacy students and faculty were identified to participate in a voluntary, anonymous survey and academic detailing session regarding meningitis and MenB vaccination. Four classes were randomly chosen as well as one College of Pharmacy faculty meeting from March to April 2019. Participants completed a 10-question survey which consisted of 3 questions to gain baseline meningitis knowledge, followed by a 3-5 minute educational detailing session, followed by 7 questions related to the education provided. The goal was to educate on meningitis in the college-aged population and the differences between the meningitis vaccines for serogroups A/C/W/Y versus serogroup B. Nominal and ordinal data results will be reported as frequencies. Continuous data will be reported as mean ± standard deviation (SD). This study was approved by the University of Rhode Island Institutional Review Board.

Preliminary Results: One hundred and eighteen students and faculty, 20-65 years of age, completed the survey and detailing session. Prior to the educational detailing, 78.3% did not know the difference between the vaccines for meningitis serogroups A/C/W/Y (Menactra) vs. serogroup B (Bexsero, Trumenba). When subjects under the age of twenty-five were asked if they were vaccinated against serogroup B, 55.1% said they were vaccinated; however, post-detailing, only 40% said they were vaccinated. After the educational detailing, 90.5% of participants stated they would be more likely to recommend the menB vaccine to incoming college freshman or receive it themselves. As a result of this educational campaign, over forty students were vaccinated against MenB through College of Pharmacy-led clinics. Additional academic detailing and follow-up clinics are scheduled for the 2019-2020 academic year with results in progress.

Conclusions/Implications: Meningitis B outbreaks across the country have raised serious concern over the lack of required vaccination for this serogroup among college students, the most vulnerable population for transmission. Research suggests confusion remains between the two types of meningitis vaccines. Educational initiatives are needed to close the knowledge gap for college students and faculty to improve awareness of MenB and increase vaccination rates among students.

222-Trends in and Factors Associated with U.S. Older Adults Receiving the Influenza Vaccination at Retail Pharmacies. Liao C, 1989, Mott D, Ford II J, UW-Madison. Email: cliao26@wisc.edu.

Objective: Older adults (age 65 years +) are at greater risk of influenza-related deaths, hospitalization, and illness. Pharmacist involvement in providing the influenza vaccination (IV) is one approach to increasing IV rates. However, little is known about nationally representative trends in the use of retail pharmacies for the IV and about factors that influence the choice of receiving their IV at a retail pharmacy among older adults. This study aims to address these gaps through two specific aims: (1) to provide estimates for the location older adults used for receiving their IV, including retail pharmacies, and (2) to identify factors associated with older adults receiving their IV at a retail pharmacy.

Methods: Data from the 2009 to 2013 Medicare Current Beneficiary Survey (MCBS) were used. Respondents reported the location where they received the IV and retail pharmacy included "shopping mall/ other stores" and "other" location categories. Andersen's Behavioral Model was used as a framework to identify the predisposing, enabling and need factors associated with use of a retail pharmacy for receiving the IV. Multivariate logistic regression was used to determine odds ratios (OR) and 95% confidence intervals for each independent variable for each year.

Results: Across the study years, retail pharmacy was the second most common location for receiving the IV (average: 25.3%) after the "physician office and clinic" (average: 53.9%), and the proportion of the IV received at retail pharmacies almost doubled across the study period (16.7% to 30.8%). The likelihood of using retail pharmacies as a location to receive the IV was lower among African American older adults (average OR 0.55 compared to white older adults) and older adults self-reporting "good" or "fair/poor" heath (average OR 0.77 and 0.66 respectively compared to those self-reporting "excellent" health). However, the likelihood of using a retail pharmacy was higher among older adults having a college degree or higher education (average OR 1.39 compared to those having less than high school education) and older adults having at least once physician office visit during the year (average OR 1.47). Older adults living in a metro area were more likely to receive IV at a retail pharmacy relative to those living in a non-metro area from 2009 to 2011, but the effect became non-significant after 2011.

Conclusions: Retail pharmacies appear to be accessible and favorable locations for older adults to receive the IV as the use of retail pharmacies increased during the study period. The number of African American older adults who received the IV increased across the study period and a significant proportion received the IV from a retail pharmacy. Future research could examine reasons why African American older adults used a retail pharmacy for the IV. The change in metro area significance suggests a potential increase in non-metro retail pharmacies providing IV and requires further research. The role of retail pharmacies in increasing IV rates for populations of older adults with low overall vaccination rates is an important topic of future research.

223-Comparison of Wisconsin Healthcare Providers and Pharmacists Attitudes Towards Vaccine Administration and Perceived Barriers. MacKinnon III G, MacKinnon K, Pabian I, Medical College of Wisconsin School of Pharmacy, Sorum S, Martin E, Pharmacy Society of Wisconsin (PSW), Bernstein R, Department of Family and Community Medicine Medical College of Wisconsin. Email: gmackinnon@mcw.edu.

Objective: To measure attitudes, perceived barriers towards vaccine administration, and overall acceptance of pharmacists as immunization providers in Wisconsin by pharmacists and other healthcare providers.

Methods: Cross-sectional study of Wisconsin licensed pharmacists and other healthcare providers (MD, DO, NP, PA, nurses) to assess perceptions towards pharmacist involvement as immunization providers and perceived barriers.

Final Results: Respondents to the survey included 236 pharmacists and 74 other healthcare providers. Of the 236 surveyed pharmacists, 203 provided immunizations. The two primary barriers identified by immunizing pharmacies were patients refusing vaccines for financial reasons (55%) and patients not having insurance coverage for vaccines received in a pharmacy (55%). In contrast, non-immunizing pharmacists identified other responsibilities taking precedence over vaccinating as their primary barrier (75%). Other healthcare providers identified determining whether their patients' insurance will reimburse for a vaccine as their primary barrier towards providing immunizations (52%). Not surprisingly, 97.9% of pharmacists and 90.2% of other healthcare providers see vaccinations as a shared professional responsibility. Lastly, both pharmacists (82.6%) and other healthcare providers (79.6%) believe pharmacists have adequate training to administer vaccines to patients ages 6 and older.

Conclusion: These surveys provide a baseline measure of the extent of the involvement of pharmacists and other healthcare providers with immunizations in Wisconsin. Healthcare providers support pharmacists as immunization providers in Wisconsin. The findings not only demonstrate that pharmacists are capable of administering vaccines but also highlight the systematic barriers such as insurance coverage and workflow that may prevent increasing vaccination rates among all immunizers, thus impacting vaccination rates in Wisconsin.

224-The Evolution of the State-based Immunization Administration Training Program from 1998-2019. Martin E, Albright T, Sorum S, Pharmacy Society of Wisconsin. Email: emartin@pswi.org.

Objective: The Evolution of the State-based Immunization Administration Training Program from 1998-2019 Background/Objective The objective of this evaluation was to determine how pharmacist registrations for a state-based immunization administration training program were impacted between October 1998 through May 2019 due to various factors. These factors include if the training was held in conjunction with the state-based organization's annual meeting, if the training was held during a pharmacist license renewal year, if state statute changed to expand pharmacists' ability to vaccinate or if the United States Advisory Committee on Immunization Practices (ACIP) changed the recommendations for vaccination. According to state statute since 1998, pharmacists may administer any vaccine according to a physician-signed protocol. However, pharmacists could vaccinate patients above the age of 18 between 1998 to 2011. In 2011, state statute changed to expand the population pharmacists could immunize to include any patient age six or above. Pharmacists are statutorily required to meet specific training requirements that can be fulfilled by completing an immunization training course. Since 1998, a state-based organization, has offered an immunization administration training to licensed pharmacists. There are over 300,000 pharmacists in the United States trained to administer vaccines. Patients said pharmacists are the second most trusted immunizer behind physicians. Nationally, 25% of all influenza vaccines are administered at a pharmacy.

Methods: Immunization training registration information was exported from three association management system databases and analyzed. The number of registrants in years when the training was held in conjunction with the state-based organization's annual meeting was compared to years it was not. The number of registrants in years when pharmacists renew their license was compared to years they do not. It was also analyzed if registrations changed by year based on changes to ACIP recommended vaccines. The impact of statute change on registrations was also analyzed.

Results: Descriptive data shows 1151 pharmacists were trained throughout 26 trainings between October 1998 through May 2019. There was an average of 25 registrants per training. Registration in the years one through three following the 1998 statute change to allow pharmacists to provide immunizations to patients 18 and above (1998-2000) was 46% higher compared to years four through six (2001-2004). The three years after the 2011 statute change to allow pharmacists to provide immunizations to patients ages six and above (2011-2014) had 121% higher registration than following three years (2015-2018). Registration was higher when the training was held in conjunction with the annual meeting (average of 26.3 registrants) than when the training was not held in conjunction (average of 24.6 registrants). There is no correlation with pharmacist license renewal years or changes in ACIP recommendations and number of registrants.

Implications/Conclusions: Registration was highest in the three years following statute changes, suggesting pharmacists are interested in receiving training upon scope expansion. Registration is highest when offered with the state association's annual meeting, suggesting hosting trainings in conjunction with a meeting may increase the number of pharmacists trained at an individual event.

225-Pharmacy Technicians Providing Pediatric Immunizations. McKeirnan K, Washington State University College of Pharmacy and Pharmaceutical Sciences, Sarchet G, United States Public Health Services. Email: kimberly.mckeirnan@wsu.edu.

Objective: Pharmacy Technicians Providing Pediatric Immunizations Background: The movement to allow pharmacy technicians to administer immunizations is growing. In March of 2017, the Idaho State Board of Pharmacy took an important step in finding a novel solution for low immunization rates: creating new legislation allowing pharmacy technicians to administer immunizations. As of 2019, pharmacy technicians are allowed to administer immunizations in three other states and within the federal pharmacy system when

technicians are properly trained and supervised. Immunization-trained pharmacy technicians were incorporated into the immunization practices at the Indian Health Services facility Whiteriver Service Unit (WRSU) on the Fort Apache Reservation, which spans over 1.6 million Acres in Northeastern Arizona. WRSU encompasses two The Joint Commission (TJC) facilities, Whiteriver Indian Hospital and Cibecue Health Center. WRSU serves a patient population over 20,000 people, accounting for 40,000 emergency rooms visits and 120,000 outpatient visits annually. Objectives The objective of this research was to gather information about the impact of pharmacy technicians administering immunizations in federal facility serving a large rural and medically underserved population.

Methods: In 2018, seven pharmacy technicians from the Whiteriver Indian Hospital participated in the Washington State University Pharmacy Technician Immunization Training Program in Spokane, Washington. The immunization-trained technicians worked in the pharmacy clinic and were also engaged to join Whiteriver Indian Hospital's reservation immunization outreach initiative. The number of immunizations given by the pharmacy technicians, including type of immunization and patient age, were tracked for a 1-year period.

Results: The seven immunization-trained pharmacy technicians administered 4400 injections for a total of 4858 vaccinations in one year. Vaccinations were administered to patients ranging in age from 2 months to 85 years and included protection against diphtheria, tetanus, polio, hepatitis A and B, H. Influenza, human papillomavirus, seasonal influenza, meningitis, measles, mumps, rubella, varicella, pneumonia, and rotavirus. Adding immunizing pharmacy technicians also created more time for pharmacists to participate in other clinical services. Immunizing technicians were well received by the pharmacists and also had a positive impact on pharmacy workflow.

Conclusion: The immunization technicians were key in increasing childhood vaccination rates on the reservation and helping to immunize high risk children under 1 years of age that had not previously received routine vaccinations. Adding pharmacy technicians to the immunization neighborhood, particularly for pediatric patients in underserved areas, could have an important impact on improving public health.

226-The Potential Impact of Pharmacy-based Initiatives to Improve Human Papillomavirus (HPV) Vaccination Rates in Rural Populations. Melson C, Richardson L, Presbyterian College School of Pharmacy. Email: ccmelson@presby.edu.

Objective: This study aimed to determine if community-based pharmacy provision of HPV vaccines attributed to different vaccination rates between these neighboring rural SC counties. South Carolina (SC) Department of Health and Human Services (DHHS) identified two contiguous SC counties, Union and Laurens, with a high variation in human papillomavirus (HPV) vaccination rates. SC Medicaid data reported 44-55% of 13 year olds in Union county and 13-26% of 13 year olds in Laurens county received at least one HPV vaccination. Vaccination rates of 13 year olds who received two or more HPV vaccines were 25-35% in Union and 4-10% in Laurens.

Methods: Using the assistance of online search engines and a statewide independent pharmacy directory provided by the South Carolina Pharmacist Association, retail pharmacies in Laurens and Union county were identified. Each pharmacy was contacted via phone, visit, or email. Pharmacists at the various study locations were asked similar questions regarding current on-hand HPV vaccine inventory, how often the HPV vaccine was kept in stock and administered, whether provision of the vaccine was promoted and the frequency spontaneous patient inquiry about HPV vaccinations. Answers were documented and responses from each county were compared to determine if the difference between the HPV vaccination rates in the two counties might be attributable to pharmacist involvement in vaccination. Descriptive statistics were used.

Results: Eleven out of sixteen pharmacies in Laurens county and four out of five pharmacies in Union county responded to the survey questions. In Laurens county, nine pharmacies reported actively administering any type of vaccine, four pharmacies traditionally stocked HPV vaccinations, and two pharmacies currently had HPV vaccinations in stock. No Laurens county pharmacy directly advertised HPV vaccinations, and the reported reasons for not having the vaccine in stock included lack of demand, expiration typically occurring before usage, and cost of procuring the vaccine. Of the four Union county pharmacies, all four administered vaccinations of any kind, one pharmacy traditionally stocked HPV vaccinations, and one pharmacy currently had HPV vaccinations in stock. One pharmacy in Union county directly advertised for HPV vaccinations. Lack of demand for the vaccine was also commonly noted as the reason for not having the vaccine in stock. Union county pharmacists reported being asked about the HPV vaccination by customers nearly twice as often during pharmacy visits compared to pharmacists in Laurens county.

Conclusion: While this study did summarize the likelihood of pharmacies in Laurens and Union county stocking, offering and promoting the HPV vaccine, it remains unclear, and is unlikely, that differences in vaccination rates is attributable to pharmacy-based initiatives. This study does highlight potential opportunities for many rural community-based pharmacies to positively impact and improve HPV vaccination rates. Larger studies should be conducted to determine if routine promotion of the vaccine could overcome barriers to provision, such as lack of patient demand, unused inventory, and expensive supply.

227-Adherence of Tdap Administration to ACIP Guidelines and its Implications on the Healthcare System. Monkurai B, Lawrence P, Smith K, Roseman University of Health Sciences College of Pharmacy. Email: bmonkurai2@roseman.edu.

Objective: The purpose of this study was to identify 1) over-administration of the Tdap (tetanus toxoid, diphtheria toxoid and acellular pertussis antigens) vaccine, 2) pharmacists and providers' knowledge of Tdap administration guidelines and 3) cost implications of overuse. Tdap was introduced in 2005 as a single booster dose for all persons age 11 years and older in hopes of providing protection

to infants from pertussis via the cocooning method. Tdap is only recommended as a single dose for the general population; however immunizers may be administering Tdap every 5-10 years as a tetanus booster.

Methods: 1) Tdap administration data was gathered for the time period of January 1, 2006 to December 31, 2018 from the Utah Statewide Immunization Information System (USIIS) and from Nevada's WebIZ immunization information system for all adult males aged 18 years and older and all adult females aged 55 years and older. 2) All pharmacists, physicians, physician assistants and nurse practitioners holding an active professional license and practicing in Utah were surveyed via Qualtrics on knowledge of current guidelines regarding Tdap administration. 3) Cost information for Tdap and Td (tetanus and diphtheria toxoid), was collected from pharmacies, wholesalers and published sources. This research project was reviewed by the institutional review board (IRB) and deemed exempt. The primary outcome was to identify Tdap over-administration and associated trends. Secondary outcomes were pharmacists and clinicians' knowledge of Tdap guidelines, barriers to immunizing according to guidelines, and the approximate cost impact of inappropriate use.

Results: 1) 520,551 records from Utah and 346,219 records from Nevada were included in the analysis. 51,861 (9%) Tdap vaccines were inappropriately administered in Utah and 27,952 (7%) in Nevada. Of the inappropriate vaccines administered, 60% in Utah and 76% in Nevada were administered within less than 5 years of initial vaccination. 2) Responses to the survey were collected between July 23 and August 9 of 2019. 12,594 pharmacists and providers were included in the study. 606 respondents completed survey. 37% pharmacists and 51% providers believe that Tdap has replaced Td. 28% pharmacists and 43% providers always check USIIS prior to vaccination. When presented with a scenario, 73% pharmacists and 82% providers answered it incorrectly. Reported barriers include access to records, access to Td, frequent guideline changes and lack of insurance coverage. 3) Average cost of one Tdap vaccine is $58, approximately $15 more than one Td vaccine (p-value 0.03). Between 2006 and 2018, the inappropriate administration of the Tdap vaccine and its implication on healthcare in Utah alone is estimated to be over $2,000,000.

Implications/Conclusions: Limitations to this study include missing or erroneous electronic vaccination records, exclusion of women aged < 55 years, and survey response rate. Tdap is being administered more than once to the general population. Additional doses of Tdap generates increased healthcare costs but offers a limited impact on the overall burden of pertussis in the United States. Pharmacists and providers could benefit from additional education regarding the role and effectiveness of the Tdap vaccine. Citation pending acceptance at ASHP Midyear 2019

228-Breaking down barriers: assessing patient perceptions and influences regarding the recombinant zoster vaccine. Park K, Adams B, Clark S, West Virginia University School of Pharmacy, Hines K, Allied Healthcare. Email: khpark@mix.wvu.edu.

Objective: In the United States, herpes zoster will affect 1 in 3 people in their lifetime leading to painful, long-term complications. Clinical trials have shown that the recombinant zoster vaccine (RZV) is over 90% effective at preventing herpes zoster in patients 50 years of age and older. RZV differs from the previous zoster vaccine in that it is a two-dose series, with the second dose given 2-6 months after the first dose. The objectives of this study are to 1) assess patient perceptions about the RZV, 2) determine factors influencing patients to receive the vaccine, and 3) evaluate the impact of vaccine dose reminders.

Methods: This prospective, non-controlled study will be completed at a single independent community pharmacy site. Patients will be enrolled if they are 50 years of age or older, can read and write English, and have received the first dose of the RZV. Those who meet inclusion criteria, and provide informed consent, will be asked to complete a non-validated survey while the second dose of the vaccine is prepared by an immunizing pharmacist or student pharmacist. Survey responses will be complied at the end of the study period, and a descriptive statistical analysis will be completed in order to determine trends in patient demographics, reasons for receiving the vaccine, and how participants remember to receive subsequent doses of vaccines.

Results: Results in progress.

Conclusions: N/A Implications: The aim of this study is to provide insight into the perceptions and influences motivating patients to receive the RZV. Exploring perceptions could help to fill gaps in knowledge or correct misinformation. Understanding why patients elected to receive the vaccination series could help determine what information should be provided in order to increase vaccination rates. Additionally, this study may shed light on what methods patients use to remember subsequent doses of a vaccine. This could help pharmacists determine the most effective form of communication and positively impact vaccine series completion rates.

229-Barriers to Receiving Influenza and Pneumococcal Vaccines For Patients Living With HIV. Saba M, Mercer University College of Pharmacy and Walgreen Co., Kinsey J, Mercer University College of Pharmacy, Richmond K, Schnepp A, Walgreen Co.. Email: saba_m@mercer.edu.

Objective: Patients living with HIV are at high risk for morbidity and mortality associated with influenza and pneumonia, which were both one of the top 10 leading causes of deaths among the general population in the United States in 2017. Previous research has found that overall vaccine coverage remains suboptimal among HIV-infected adults. Currently, there is limited data on identifying barriers that this patient population may encounter when attempting to receive vaccinations. It is speculated that suboptimal coverage is multifactorial. Discussing the importance and understanding potential barriers to receiving annual influenza and recommended pneumococcal vaccines in HIV-infected adults can contribute to the public health initiative for reducing vaccine preventable illnesses. Objective: The purpose of the study is to provide preliminary data assessing specific barriers patients living with

HIV may experience in receiving influenza and pneumococcal vaccines and to develop strategies to address these barriers in the future. The objective is to identify patient specific barriers associated with receiving these vaccines among HIV-infected adults who are receiving anti-retroviral therapy (ART) from community-based specialty pharmacies. Understanding potential barriers associated with receiving these vaccines is important for identifying and creating effective interventions to address any potential gaps in care for this patient population.

Methods: A cross-sectional telephonic survey of participants who are receiving anti-retroviral therapy (ART) for HIV treatment will be conducted approximately between October 2019 and May 2020. Select chain community-based specialty pharmacy sites which dispense ART for HIV treatment were identified for patient outreach. A convenience sample of participants will be asked to partake in a telephonic survey regarding routine influenza and pneumococcal vaccines. The survey consists of two parts which can be completed in 3-5 minutes. The first part will gather demographic information such as gender, age, and race/ethnicity. The second part consist of 5 questions, three of which are opinion-based. The survey questions and response selections regarding barriers to immunization were adapted from a previously published study which identified barriers to receiving adult immunizations as perceived by consumers and healthcare professionals.The Georgia Registry of Immunization Transaction and Services (GRITS) will be accessed directly after conducting each survey in order to verify vaccination records for patient responses regarding whether they have received the specified vaccines. Participants included must be English speaking, HIV-positive adult patients (age ≥ 18) who are enrolled in the selected pharmacies' patient connect care management program for anti-retroviral treatment for HIV dispensed from community-based specialty pharmacies in Georgia. Participants will be excluded if they are less than 18 years of age, are unable to consent, are living outside of Georgia, or are receiving pre-exposure prophylaxis treatment (PrEP). Data will be analyzed using descriptive statistics to quantitatively summarize collected information based on participant responses to survey questions.

Preliminary/Final Results: In progress.

Conclusions/Implications: In progress.

230-Operation Immunization Involvement with the BiNational Health Fair. Schumacher S, Goeser C, Zamudio A, Starkel S, Rief K, Carr D, Jantrakul N, Hoie E, Tilleman J, Creighton University. Email: sms09100@creighton.edu.

Objective: The BiNational Health Fair was started by the Mexican Consulate and the South Omaha Community Council and a consortium of local organizations including but not limited to: local universities, the Immunization Task Force, and the OneWorld Community Health Center (OneWorld). Initially, the Operation Immunization (OI) group was involved IN THE BINATIONAL HEALTH FAIR THROUGH IMMUNIZATION EDUCATION and further advanced to providing immunizations. Community engagement with the BiNational Health Fair and OneWorld allowed the opportunity for pharmacy students to provide services to an underserved health population, including immigrants that are only Spanish speaking. Pharmacy students that participated in this event are not required to be bilingual, but several are. The objective OF THIS INNOVATIVE PRACTICE REPORT is to describe the involvement of the OI student group with the BiNational Health Fair in South Omaha THROUGH INFLUENZA VACCINES AND IMMUNIZATION EDUCATION.

Methods: The OI students volunteered at the BiNational Health Fair with our community partner OneWorld. This event offered immunization screening and administration of influenza vaccines. Student volunteers were solicited using an online scheduling tool. Prior to the event, students participated in a BRIEF orientation. Students and pharmacy faculty arrived 15 minutes prior to the start of the event and responsibilities were reviewed. Immunization screenings required the students to review each immunization on the adult immunization schedule with the patient to recommend further vaccines they may qualify for at a later date. After the event, the students received a follow up survey asking for feedback on their experience.

Results: During the 2019 BiNational Health Fair event, students provided influenza vaccines and screenings to patients to a predominantly Spanish speaking community. Vaccination screenings provided the opportunity to inform an underserved population of the importance of remaining up-to-date with the vaccine schedule. There were 11 chapter members present along with SIX faculty, serving 157 patients. Anecdotally, students reported positive experiences with working with a population that speaks a different language. Some students that attended also spoke Spanish and could communicate with patients. Students recognized the language barrier their patients have in the Omaha community that may prevent them from receiving essential health services. Students also saw the need for more events like these so patients can know more about their own health and medical needs. They were also able to use the ignatian values that intertwines with the cirriculum, joining in solidarity with those who are vulnerable to provide empathetic and compassionate care.

Implications/Conclusions: The students that participated in this event worked in collaboration with OneWorld to provide influenza vaccinations and immunization education to a predominately Hispanic population. This partnership with OneWorld has allowed the students to hone their knowledge and gain confidence in their ability to help educate the public on the importance of vaccinations. Lastly, this event allowed the students to experience the Ignatian Values TO provide empathetic and compassionate care.

231-Exploring Human Papilloma Virus (HPV) Vaccine as a Pharmacy Benefit. Stephens H, Presbyterian College School of Pharmacy. Email: hcstephen@presby.edu.

Objective: The objective of this study is to create a resource providing current information on Human Papillomavirus (HPV) vaccine coverage by insurance providers in South Carolina as a tool for health care providers and the public to overcome barriers to vaccine

access. South Carolina reports 29.1% of adolescents age 13-17 years old received the full HPV vaccination series in 2016 which is well below the national average of 43.4%. Pharmacists have the potential to serve as access points for vaccination; however the lack of coverage of the vaccine as a pharmacy benefit may affect pharmacy willingness to stock and administer the HPV vaccine.

Methods: Insurance providers were identified through the SC Department of Insurance and selected for survey if they covered a significant percentage of the population. Each provider was surveyed about whether the HPV vaccine was covered or not, and if there were any limitations to coverage. Specifically, it was sought to determine if the vaccine was covered as a pharmacy benefit, meaning the vaccine would be a covered service if administered at a pharmacy. A supplemental resource was compiled that included contact and coverage information of insurance providers along with age restrictions and need for prior authorization to receive the vaccine. State programs and manufacturer-assisted programs were also included to provide information regarding vaccine provision for underinsured potential vaccine recipients.

Results: Ten insurance were contacted, five were private providers and five were Medicaid plans. The Vaccines For Children program was also reviewed. Of the five private providers surveyed, three cover the HPV vaccine as a pharmacy benefit. All of these plans covered the vaccine as a clinical benefit up to age 26 years. Of the five Medicaid plans offered in South Carolina, only one plan, which enrolls 9.3% of the Medicaid population in need of the vaccine series, covers the HPV vaccine as a pharmacy benefit without a prior authorization for those age 19-45 years. Another plan covers the vaccine as a pharmacy benefit with a prior authorization.

Implications: The lack of coverage of the HPV vaccine as a pharmacy benefit within South Carolina could be a barrier to vaccine receipt in the state and may negatively impact vaccination rates. Since insurance providers must cover CDC recommended vaccines, many insurance providers are covering vaccines as a clinical benefit only within physician offices. Covering the HPV vaccine as a pharmacy benefit has potential to positively impact HPV vaccination rates within South Carolina; however, larger and more pointed studies will need to be conducted to verify this hypothesis. The summary of HPV vaccine coverage by SC insurance providers can serve as a useful tool to assist pharmacists and the general public with identifying avenues to receive the HPV vaccine through various services.

232-Pharmacist-Physician Collaborative Models to Improve HPV Vaccination: A Developmental Formative Evaluation of Barriers and Facilitators. Teeter B, Curran G, Thannisch M, Mosley C, Martin B, Thomas J, Winston K, Romero J, University of Arkansas for Medical Sciences. Email: BSTeeter@uams.edu.

Objective: The objective of this study was to utilize implementation science methods to conduct a developmental formative evaluation of potential barriers and facilitators associated with increasing HPV and VFC vaccinations in community pharmacies. Human Papillomavirus (HPV) is the most common sexually transmitted infection in the United States and causes cervical, vaginal, vulvar, penile, oropharyngeal, and anal cancers. Gardasil-9 protects against high-risk HPV types and is recommended as a 2 dose series beginning at age 11. However, current vaccination completion rates fall far short of the Healthy People 2020 goal of 80%. Vaccines for Children (VFC) provides free vaccines to providers for administration to children at no charge and pays the provider a fee for each immunization administered. Participation in the program is low; only 4% of Arkansas' physicians are VFC providers and local health departments are the sole resource of VFC vaccines for 20 of Arkansas' 75 counties. Despite overwhelming need in Arkansas, pharmacy participation in VFC is virtually non-existent.

Methods: A developmental formative evaluation using semi-structured interviews was conducted. Interview guides were informed by the Consolidated Framework for Implementation Research (CFIR) and Implementation of Change Model (ICM). Additionally, feedback was elicited on the following 3 proposed pharmacist-physician collaborative models and barriers/facilitators to each: 1) "shared-responsibility" – the first dose of HPV vaccine is administered at the physician clinic with the second administered at the collaborating pharmacy; 2) "pharmacy-based" – all shared patients between pharmacy and physician clinic receive both doses of the HPV vaccine at the pharmacy; 3) "in-sourced" -certified VFC pharmacy provides HPV vaccine in physician clinic on scheduled days. Interviews (30-60 minutes) were conducted with 15 pharmacy staff members and 15 physicians. Rapid content analysis was utilized to analyze the data. Two researchers used an interview summary template to code each recording and met to compare results and resolve discrepancies.

Preliminary Results: Interviews with pharmacy staff have been completed. Physician interviews are ongoing. Both pharmacy staff and physician participants have reported characteristics of the intervention not differing from other services provided in their practice settings. However, upkeep and proper use of the state immunization registry is a concern among both groups. The most frequently reported barrier to HPV vaccine provision is parent disinterest. Physicians reported the time required to explain the vaccine to parents with lower health literacy as a barrier. Many physicians and pharmacists mentioned the HPV vaccine not being required to attend public school as a major barrier when recommending the vaccine to adolescents' parents. However, both groups mentioned the need for increased strong recommendations from physicians and pharmacists. The majority of pharmacist and physician participants expressed interest in pursuing a collaborative relationship to provide more VFC and HPV vaccines with the "shared-responsibility" model garnering the most interest/support. Multiple tools have been suggested to facilitate the collaborative relationships. Additional education/structured processes for all providers at collaborating sites is frequently mentioned as a necessity.

233-Evaluate Impact of Two Interventions on Human Papilloma Virus (HPV) Vaccination Rates. Tran K, Ralphs/Western University of Health Sciences (College of Pharmacy). kntran@westernu.edu.

Objective: Evaluate Impact of Two Interventions on Human Papilloma Virus (HPV) Vaccination Rates at Community Pharmacies

Background/Objectives: The objectives of this study are 1) to evaluate the impact of a priming phone-call outreach and face-to-face consultation on HPV vaccination rates in a community pharmacy setting and 2) to identify barriers that may discourage patients from receiving the HPV vaccine. Recommendations from healthcare providers are a key factor that influence vaccine uptake. With the expanded scope of community pharmacy practice in immunization, pharmacists can help close the immunization gap through advocacy and education. Despite the availability, safety, efficacy and age eligibility of HPV vaccines in preventing cervical cancers and other cancers, vaccination rates remain suboptimal compared to other routine vaccines. There are limited studies on how community pharmacists can contribute to improving HPV vaccination rates.

Methods: This study is a pre-post intervention evaluating HPV vaccine uptake among patients at community pharmacies. The targeted subjects will serve as their own control group. Subjects will be enrolled at select pharmacies from November 2019 to January 2020. Subjects who are 18 to 45 years of age and have medications ready in the will call-bin will be identified throughout the week using a system-generated report, which is accessible through the pharmacy dispensing software. A structured script promoting the HPV vaccine as an effective, cancer-preventable vaccine will be utilized by a pharmacy staff member to engage subjects on the benefits of the HPV vaccine. Subjects will receive either a priming phone-call outreach before they arrive at the pharmacy for their medications or a face-to-face consultation at pick-up. If subjects decline the HPV recommendation, attempt will be made to inquire about the reasons. The California Immunization Registry (CAIR) will be utilized one-month post-intervention to determine if the subject received the HPV vaccine. Baseline characteristics and barriers to HPV vaccination will be analyzed using descriptive statistics. The primary outcome will be assessing the impact of the interventions on HPV vaccination rates. A paired t-test will be used to analyze the HPV vaccination rates at the pharmacies, pre-and-post intervention. A student t-test will be used to compare the mean HPV vaccination rates between the phone-call outreach and the face-to-face consultation.

Results: Pending. It is hypothesized that there is a positive correlation between the pharmacy's interventions and an increase in HPV vaccination rates.

Conclusion/Implications: Pending. It is expected that the findings from this study may encourage pharmacy staff to proactively identify and outreach to patients regarding the HPV vaccine or other pertinent vaccines.

234-Impact of Pharmacists' Interventions on Completion of Recombinant Zoster Vaccine (RZV) Series in a Community Pharmacy. Tyler R, Walgreens. regan.tyler@walgreens.com.

Objective: Shingles is a preventable viral infection that is expected to affect 1 in 3 Americans in their lifetime. Vaccine-preventable diseases such as shingles that affect a predominately adult population tend to be a public health issue because of the lower vaccination rates among adults when compared to children. This issue is further complicated by the fact that the shingles vaccine currently preferred by the Advisory Committee on Immunization Practices (ACIP), recombinant zoster vaccine (RZV), is administered in a two-dose series. Adults who might struggle to receive a one-dose vaccination are likely to struggle when adding an additional dose requirement months following the initial vaccine. There is also a cost burden associated with the vaccination, as coverage rates for adult vaccines remain low despite their routine recommendation. Pharmacists have the opportunity to make an intervention to combat a preventable illness. The primary purpose of this research is to identify the impact an intervention (phone call from a pharmacist) has on the likelihood of a patient returning to receive their second dose of RZV. The secondary objective of the research is to explore insurance coverage and copayment trends with second dose administration of RSV.

Methods: In this retrospective cohort study, data on pharmacists' interventions defined as patient phone calls will be gathered from a pharmacy-generated report, the Shingrix Call list (SCL). Stores randomly selected from within a large pharmacy chain will have their SCLs reviewed for calls categorized as either receiving the intervention (spoke with a pharmacist) or not receiving the intervention (did not speak with a pharmacist). Stores are eligible to be randomly selected if they are located in Mississippi and have had their SCL initiated by a pharmacist. Patients identified on stores' SCLs who received their first dose of RZV between 6/1/18 and 5/31/19 will have their profiles reviewed to determine if and when the second dose of RZV was administered. Additionally, the copayment of the RZV dose(s) and the insurance coverage utilized will be reviewed. Each eligible patient on a store's SCL will be given a code number. This code number will be documented on a password-protected spreadsheet. Patient data will be placed in the spreadsheet with their code number. Data from patients will be used collectively to determine the percentage of patients who were reached and received their second RZV dose and the percentage of patients who were not reached and received their second dose of RZV. Additionally, the effects of immunization cost to the patient will be analyzed. Research was approved through the University of Mississippi Institutional Review Board (IRB).

Preliminary Results: Ten randomly selected pharmacies will have their SCLs reviewed to determine the impact of pharmacists' interventions and insurance coverage on patients returning for their second RZV dose.

Conclusions/Implications: We expect to see a higher percentage of patients receive their second dose of RZV if they spoke with a pharmacist. If this conclusion is reached, steps may be taken to implement pharmacists' interventions on a variety of multi-dose vaccinations administered in the large pharmacy chain.

235-Immunization Practices: A Survey of Community Pharmacy Personnel. Zhao Y, Westrick S, Auburn University, Fish H, Beckner J, National Community Pharmacists Association, Ha D, Stanford Healthcare. Email: yzz0167@auburn.edu.

Objective: Pharmacists have been increasingly accepted by patients as immunization providers. To engage in immunization practices and be part of the Immunization neighborhood, pharmacists are required to adhere to the Standards for Immunization Practices that encompass three domains including: 1) the Advisory Committee on Immunization Practices (ACIP) guidelines and recommendations, 2) immunization practices including assessing vaccine needs and documentation, and 3) pandemic emergency preparedness. The objective was to determine pharmacy personnel's knowledge of immunization standards, their immunization practices, and their experience in emergency preparedness among the members of the National Community Pharmacists Association (NCPA).

Methods: A cross-sectional study design, using a self-administered online survey was conducted from April – June 2019. Survey participants were recruited through two issues of the NCPA electronic newsletters. Additionally, three email invitations were delivered to 8,685 owners and managers, 1,427 staff pharmacists, and 287 pharmacy technicians who were NCPA members, with 10 gift cards as lottery incentives. The survey consisted of 47 questions and required approximately 20 minutes to complete. Measures were designed to assess participants' knowledge of ACIP guidelines, their immunization practices, as well as their experience with pandemic emergency preparedness.

Results: In total, 283 participants completed the survey (Response rate = 2.7%), representing 37 states. Based on confidence level of 95%, the margin of error of this survey was 6%. A non-response investigation was conducted by comparing individual and pharmacy characteristics between early (10%) and late responders (10%). Only educational levels were significantly different between the early and late respondents; there were more individuals with B.S. Pharmacy degree in the late respondent pool, compared to the early respondent pool. The average age (standard deviation) of the study participants was 45.58 (±12.60) years. The majority were female (58.9%), White (93.4%) and non-Hispanic (99.3%). When asked about knowledge of guidelines and recommendations, the majority of respondents evaluated themselves as "very knowledgeable" about vaccines for adults and pregnant women, compared with "somewhat knowledgeable" about vaccines for adolescents and children. The majority (89.60%) of participants' pharmacies provided immunization services in 2018, with influenza vaccine being the most common vaccine provided to all patient groups. Regarding the current immunization practices, the majority verbally discussed the vaccine needs with patients (94.9%) and used phone calls as a way to remind patients about upcoming immunization needs (60.3%). In terms of immunization documentation, 75.7% reported enrolling in Immunization Information Systems (IIS) and 66.7% used IIS to retrieve patients immunization history. Finally, the majority have not participated in emergency drill (77.5%) nor actual emergency response (90.1%); however, they expressed high willingness to obtain training in this area.

Conclusions: This study described pharmacy personnel's self-reported knowledge of immunizations and current immunization practices and identified several practice gaps. This study recommends these gaps to be addressed through advanced training in the areas of: ACIP guidelines for adolescents and children, best practices for immunization documentation and retrieval of immunization history using IIS, and participation in pandemic emergency preparedness.

Laws and Regulations

236-A Five-Year Review of Expanded Access Programs for Orphan Designated Drugs. Alfond K, Baldwin J, Douglass M, Northeastern University. Email: k.alfond@northeastern.edu

Objective: Expanded access programs (EAP) intend to provide patients with access to investigational drugs for life-threatening or serious that currently do not have Food and Drug Administration (FDA) approved treatment options. Unlike a clinical trial, these programs are not designed to collect information needed for regulatory approval, but instead provide treatment options to patients who lack alternatives. The purpose of this study is to identify and characterize the EAPs listed on clinicaltrials.gov associated with orphan designated novel drugs that were approved between 2014 – 2018.

Methods: FDA New Drug Therapy Approval Summaries from 2014 – 2018 were used to identify approved, orphan designated novel drugs. Clinicaltrials.gov was utilized to identify EAPs associated with the approved drugs. The following data on each EAP was collected and analyzed: Condition or disease treated, intervention details, sponsors and collaborators, and date first posted. Finally, Micromedex's Red Book database was used to identify the average wholesale price of the approved therapy.

Preliminary Results/Final Results: Work in progress. Results will be displayed at APhA Annual Meeting.

Conclusion/Implications: Work in progress. Conclusions will be displayed at APhA Annual Meeting.

237-Survey of Oklahoma community pharmacists' attitudes on acquisition of provider status and prescriptive authority. Hakim N, Southwestern Oklahoma State University/Walgreen Co., Williams N, Appeddu L, Southwestern Oklahoma State University. Email: nika.hakim@swosu.edu.

Objective: The study objectives are to: 1) measure community pharmacists' level of interest in obtaining provider status and prescriptive authority in Oklahoma, 2) analyze pharmacists' confidence in performing expanded responsibilities granted through provider status, 3) determine comfort in prescribing autonomously versus under a collaborative practice agreement, and 4) identify barriers for community pharmacists pursuing provider status and prescriptive authority. Pharmacists have been providing clinical services to patients for years but cannot receive adequate and/or consistent compensation due to non-recognition as a provider in the Social Security Act. Seven states currently recognize pharmacists as providers, allowing them inclusion in private networks for reimbursement by commercial insurance companies. With provider status, expansion of the pharmacist scope of practice increases

the likelihood that pharmacists would receive appropriate compensation. Along with provider status, prescriptive authority is another type of advanced service performed by pharmacists in 49 states and the District of Columbia, ranging from prescribing autonomously to prescribing under a collaborative practice agreement. Because of the various roles of pharmacists among states and contrasting opinions, it is unclear if all Oklahoma community pharmacists desire provider status or support this advanced practice model of prescriptive authority.

Methods: A 3-part electronic Qualtrics survey with approximately 40 questions will be created and emailed to 346 Oklahoma licensed pharmacists working at a large community pharmacy chain and to approximately 600 pharmacists who are members of the Oklahoma Pharmacists Association. This survey would capture perspectives from pharmacists working at a large retail chain versus those working at independent pharmacies. Completion of the survey is voluntary, and participant information will be de-identified. Gift cards will be used as an incentive for survey completion. The first part of the survey will concentrate on pharmacists and provider status, exploring its desirability, practicality, and limitations. The second part of the survey will focus on pharmacists' perspectives on obtaining prescriptive authority, asking questions that measure willingness to prescribe selective medications and identify potential barriers. The third part of the survey will consist of demographic questions such as age, pharmacy school and graduation year, years of experience, current practice setting, gender, race, prescription store volume, and store zip code. The survey will be piloted with a small sample size of pharmacists to ensure clarity of questions. Initial survey distribution will occur in early December followed by two reminder emails. Completion of the survey constitutes consent to participate. This study will be submitted to the University Institutional Review Board for approval. Data will be analyzed with descriptive and quantitative statistics.

Preliminary Results: N/A.

Implications: The results of this survey may enlighten us on Oklahoma community pharmacists attitudes regarding acquisition of provider status and prescriptive authority. Surveying both independent and large-chain retail pharmacists will provide a broader perspective. Understanding perspectives about these advanced practice models could help unify the profession to push for change and help identify if further education is needed to prepare pharmacists for these roles.

238-Impact of mandatory use of Prescription Drug Monitoring Program (PDMP) on the concerning patient history alerts in Wisconsin. Kaur A, Mott D, Gilson A, University of Wisconsin-Madison School of Pharmacy. Email: akaur7@wisc.edu.

Objective: The objective of the study was to evaluate the effects of the PDMP use mandate on the number of concerning patient history alerts in Wisconsin. Administrators of the Wisconsin Prescription Drug Monitoring Program (PDMP) use submitted dispensing data to identify patients whose controlled substances dispensing patterns suggest risky behaviors and the potential for drug abuse and/or diversion. Alerts about a patient (i.e. concerning patient history alerts) are provided to prescribers when they access that patient's drug dispensing history in the PDMP prior to prescribing controlled substances. There are six alert types: multiple prescribers or pharmacies, long-term opioid therapy with multiple prescribers, early refill, high current daily dose, concurrent benzodiazepine/opioid prescriptions, and multiple same-day prescriptions. Beginning April 2017, Wisconsin prescribers were required to access the PDMP to review a patient's drug history and any alerts before prescribing controlled substances.

Method: An interrupted time series (ITSA) design was used to examine whether the number of concerning patient history alerts changed before and after the implementation of the PDMP use mandate. Quarterly data (January 2016 to June 2019) about counts of each alert type were downloaded from the Wisconsin Enhanced PDMP website. Ordinary least squares regression was used to estimate a single-group ITSA model for each alert type. A priori statistical significance level was 0.05. Data analyses were performed using STATA version 15.1 (StataCorp).

Results: Descriptive statistics showed that the largest decrease in the number of concerning patient histories was for the high current daily dose of opioids alert, while the smallest decrease related to the multiple same-day prescription alert. ITSA analysis revealed a significant and negative pre-implementation slope coefficient for all alert types, except early refill and multiple same-day prescriptions. There also was a significant immediate level drop for all alert types except early refill and long-term opioid therapy with multiple prescribers. The difference between pre-and post-implementation slopes was significant for each alert type except early refill and concurrent benzodiazepine/opioid prescriptions. Post-implementation slopes were more negative than pre-implementation slopes for three alert types: multiple same-day prescriptions, high opioid daily dose, and multiple prescribers/pharmacies.

Implications: Our results suggest that the effect of the PDMP use mandate was different depending on the alert type. These results are consistent with previous research showing that PDMP use mandates are associated with a decreased number of patients whose drug dispensing patterns suggest potential controlled substance abuse and/or diversion. Prescribers appeared knowledgeable about issues with controlled substances, as the number of concerning patient histories was declining in the time period before the PDMP use mandate was enacted. Prescribers appeared to respond to alerts that focus on aspects of drug use that can be altered directly by the prescriber at the time of dispensing, such as reducing the opioid daily dose, stopping concurrent use of benzodiazepines and opioids, and reducing the number of prescriptions dispensed by not prescribing. Future research could examine how prescribers use the alerts when prescribing, and whether the alerts promote positive prescriber/patient dialogue to address areas of concern and improve treatment success.

239-Impact of mandatory use of Prescription Drug Monitoring Program (PDMP) on prescribing patterns of opioids in Wisconsin.. Kaur A, Mott D, Gilson A, University of Wisconsin-Madison School of Pharmacy. Email: akaur7@wisc.edu.

Objective: The objective of this study was to evaluate the effects of Wisconsin PDMP use mandate on the prescribing of five different opioids. In April 2017, Wisconsin required that all prescribers access the prescription drug monitoring program (PDMP) to review patient drug histories before issuing a prescription order for more than a 3-day supply of a controlled substance. Although previous studies have evaluated the effects of PDMP use mandates, no study has: (1) used interrupted time series analysis (ITSA) to examine the dynamics of the PDMP use mandate effects, (2) examined effects on prescribing of individual opioids, and (3) used data after 2016

Method: An ITSA design was used to examine whether opioid prescribing patterns changed after the PDMP use mandate was implemented. Quarterly data (January, 2016 to June, 2019) for the number of prescriptions dispensed and number of doses dispensed for five opioid drugs (oxycodone, hydrocodone-acetaminophen, morphine, acetaminophen-codeine, oxycodone-acetaminophen) were downloaded from the Wisconsin Enhanced PDMP website. Ordinary least squares regression was used to estimate single-group ITSA models for each dependent variable (number of prescriptions dispensed and number of doses dispensed) for each opioid drug. A priori statistical significance level was 0.05. Data analyses were performed using STATA version 15.1 (StataCorp).

Results: ITSA results showed significant and negative pre-implementation slope coefficients for each opioid, suggesting that the number of prescriptions and doses dispensed were declining before the PDMP use mandate was enacted. Results also showed a significant level drop for prescriptions and doses dispensed for each opioid, indicating that the PDMP use mandate immediately reduced prescription volume and doses dispensed. Significant negative slopes emerged in the post-implementation period for the number of prescriptions and doses for all opioids, but the slopes were not significantly different from the pre-implementation slopes.

Implications: Consistent with studies analyzing effects of PDMP use mandates in other states, the mandate in Wisconsin reduced the number of prescriptions and doses dispensed for opioids. The result that prescribing changed immediately after the PDMP use mandate started suggests that the information obtained from the PDMP was useful and impactful for prescribing decisions. Opioid-related deaths decreased by 10% in Wisconsin from 2017 to 2018 suggesting that the change in prescribing might be related to the decline in deaths. The results also suggest that the PDMP use mandate did not accelerate the rate at which prescriptions for the opioids were decreasing relative to the pre-period. This might be due to differences in how the PDMP use mandate impacted prescribing patterns for the management of acute vs. chronic pain. Despite the decline, more research is needed to understand how the prescribers use the information in the PDMP when making decisions to prescribe opioids and whether patient pain management is adversely impacted by PDMP use mandates.

240-Impact of the North Carolina STOP Act on the Total Quantity of Schedule II Opioid Solid Dosage Forms Written Per Prescription for Adults in an Independent Community Pharmacy. McDaniel T, Campbell University College of Pharmacy & Health Sciences and Josefs Pharmacy, Harward J, Josefs Pharmacy, Trotta K, Herring C, Campbell University College of Pharmacy & Health Sciences. Email: tnmcdaniel1015@email.campbell.edu.

Objective: Opioid misuse and addiction are widespread problems that affect public health and can have a direct impact on risk for depression, substance abuse, and death.1 On average, 130 Americans die every day from opioid overdose. There is data supporting opioid use for the treatment of acute and chronic cancer pain. However, opioids are more commonly being prescribed for chronic non-cancer pain where there is less data.2 On June 29th, 2017 Governor Roy Cooper approved the North Carolina Strengthen Opioid Misuse Prevention (STOP) Act to aid in reducing the number of opioids prescribed.3-4 The NC STOP Act went into effect on January 1st, 2018 and limits the first time prescriptions for opioids to a five day supply for acute pain and a seven day supply for post-surgery pain.4 However, after the five or seven day limits have been reached, doctors can prescribe follow-up prescriptions for patients who are experiencing ongoing pain.4 The primary objective of this study is to compare the percentage distribution of the total quantity of schedule II opioid solid dosage forms written per prescription for adults in an independent community pharmacy setting between three time periods from July 1st, 2016 to December 31st, 2018. The secondary objectives are to describe day supply per prescription, the opioid alternatives being prescribed, the total quantity of schedule II opioid solid dosage forms prescribed by physicians and mid-level physicians, and which schedule II opioids are being prescribed. In this retrospective study, prescriptions for schedule II opioid solid dosage forms will be evaluated per PioneerRX data from July 1st, 2016 to December 31st, 2018. Data will be divided into three time periods for analysis: -Period 1: July 1st, 2016 to June 28th, 2017 before the NC STOP Act was announced -Period 2: June 29th, 2017 to December 31st, 2017 after the NC STOP Act was announced, but before it was enacted -Period 3: January 1st, 2018 to December 31st, 2018 after the NC STOP Act was enacted. The principal investigator (PI) will group the total number of schedule II tablets/capsules per prescription into four groups by quantity: -0-12 -13-30 -31-59 -60+ The first looks at emergency department prescriptions, the second looks at acute and post-surgery pain requiring 5-7 days of pain relief, the third looks larger quantities needed for acute pain relief, and the fourth looks at chronic pain prescriptions. The change in the percentage distribution will then be evaluated comparing period 1 to period 2, period 1 to period 3, and period 2 to period 3 using a chi-square goodness of fit test. For the secondary objectives, prescriptions for opioid alternatives will be evaluated per PioneerRX data from July 1st, 2016 to December 31st, 2018. The research protocol was approved by the Campbell University Institutional Review Board (IRB) and research is ongoing. However, we hope to see that the NC STOP Act had positive impact on decreasing the amount of opioids being prescribed.

241-Evaluation of the FDA real-time oncology review pilot program and its implications on the sponsors' drug application review and approval. Patel K, Rutgers Institute for Pharmaceutical Industry Fellowships, Toscani M, Ernest Mario School of Pharmacy, Rutgers

Institute for Pharmaceutical Industry Fellowships, Hermes-DeSantis E, Ernest Mario School of Pharmacy. Email: patelk48@gene.com.

Objective: The United States Food and Drug Administration (FDA) Oncology Center of Excellence created a pilot program, Real-Time Oncology Review (RTOR) in 2018. The RTOR pilot program allows Sponsors to submit the most relevant data for assessing safety and efficacy to the FDA prior to a formal submission. The purpose of RTOR is to establish a more efficient review process, maintain and improve the review quality, balance the review team's workload, and expedite patients' access to safe and effective treatments.

Methods: This study will evaluate the stringency of RTOR defined criteria, analyze the attributes of those applications accepted by the FDA for review under RTOR and compare the approval timeline to existing FDA review processes. The RTOR pilot program review process will assess numerous aspects of the program utilizing the official FDA provided resources and Cortellis, a database of life science intelligence solutions that provides insights and analytics across the development lifecycle. The use of the FDA resources and Cortellis database will facilitate collection of data for analysis. The analysis will compare the number of drug approvals via RTOR since its inception to the number of drug approvals through various FDA designations and approval pathways such as Fast Track Designation, Accelerated Approval and more. A deeper quantitative comparison will be made of the length of time from Sponsor submission to FDA approval within the RTOR program and through other pathways. Further quantitative analysis will be conducted to assess how many exceptions the FDA made to RTOR outlined criterion for application acceptance into the program. Additionally, there will be a review of approval timelines external to the US and FDA utilizing the Cortellis database to assess if the RTOR approval impacted length of review with ex-US health authorities. Finally, a general analysis of approved applications will exam if FDA required post-marketing commitments, companion diagnostics or any specific biomarker assessments.

Results: Results are currently in progress as every day the FDA announces new drug approvals through the RTOR pilot program. Quantitative statistical graphs and charts will be used to compare RTOR accepted applications to those not included within the RTOR program by March 2020. The primary endpoint will be to assess the number of accepted and approved applications and respective timelines for approval, the attributes of accepted applications and stringency of RTOR program criteria.

Conclusions/Implications: Currently, it takes, on average, six to twelve months for the average FDA review process. The purpose of RTOR is to focus the FDA review teams on data most relevant to safety and efficacy, and to increase and expedite patients' access to safe and effective treatments. Since the RTOR program decreases the timeline of the application review process, new drug products are reaching the market more quickly. The efficiency of these pilot programs directly impact specialty/oncology products in the pharmacy space, with future considerations of non-oncology applications. The results of this study will demonstrate how many new medications and indications are brought to the market in an expedited manner. This impacts the pharmacy benefit managers, managed care and hospital formularies, and clinical practice pharmacists' ability to choose the best therapy for patients in cost-effective and timely manner. Pharmacists who need to evaluate the clinical and economic value of these new products for clinical practice, clinical research and regulatory areas must be made aware of such timelines and criterion for approval and be able to understand the pilot program's impact on patient treatment options.

242-Biosimilars, Interchangeability, and Insulin-What do pharmacists need to know?. <u>Pincock L</u>, U.S. Food and Drug Administration, Center for Drug Evaluation and Research, Office of New Drugs, Office of Therapeutic Biologics and Biosimilars. Yim S, Temkin E, Food and Drug Administration, Center for Drug Evaluation and Research, Office of New Drugs, Office of Therapeutic Biologics and Biosimilars. Email: laura.pincock@fda.hhs.gov.

Objective: The U.S. Food and Drug Administration (FDA) provides the scientific and regulatory advice and oversight needed to bring safe and effective biosimilar and interchangeable products to market. Since March 2015, FDA has approved 23 biosimilar products. The approval of these products can improve access to care for patients by increasing the number of medication options and potentially lowering costs. Background/Objectives: Representatives from the U.S. Food and Drug Administration's Office of Therapeutic Biologics and Biosimilars in the Center for Drug Evaluation and Research will: • Briefly discuss the regulatory pathway for biosimilar and interchangeable product development and approval by FDA. Emphasis will be placed on FDA's rigorous approval standards, standard terminology, and biosimilar safety including immunogenicity. • Discuss the role of pharmacists in advancing the uptake of biosimilar products including formulary management, the education of healthcare professionals, patients, payors, policymakers, etc. to increase biosimilar uptake, substitution, and pharmacovigilance. • Provide important updates from FDA including the "purple book", stakeholder outreach and education, transitioning products on 3/23/20, interchangeability, and state substitution laws.

Methods: FDA Speakers will provide an update by discussing important and timely issues related to biosimilar and interchangeable products for pharmacists, pharmacy technicians, and other health care professionals.

Results: Attendees will be informed of current key issues of importance for pharmacy stakeholders. Guidances, references, and educational programs available to stakeholders will be discussed. An opportunity for questions and answers connecting stakeholders with FDA experts will be provided.

Conclusions/Implications: Biosimilar and interchangeable products can increase access to safe and effective biological treatment options and potentially lower treatment costs. Stakeholder efforts to increase the uptake of these products will be needed for their success. The role of pharmacists in patient and healthcare professional biosimilar education will be particularly critical.

243-Advocating for the Future: Interprofessional Precepting. Seignemartin B, Washington State University. Email: brandy.seignemartin@wsu.edu.

Objective: Student advocates and organizations have the ability to influence change in policies that affect them as students and professionals. The objective of this poster is to outline the process of students who successfully led the passage of a bill (HB 1726) at the Washington State Legislature during the most recent legislative session to expand interprofessional service and educational opportunities for health science students. The law allows any licensed nurse (RN, ARNP), physician (MD, DO), or pharmacist (RPh) to supervise or precept students enrolled in accredited programs of nursing, medicine, and pharmacy respectively, while providing healthcare services, so long as: • The services fall within the shared scope of practice of the intended professional license of the student and that of the supervising professional. • Students perform the services without compensation or expectation of compensation. • The school the student is enrolled in verifies that the student has demonstrated competency to perform the services. • The student provides proof of appropriate liability insurance.

Methods: The poster will focus on the process students utilized to pass this bill and address stakeholder concerns: • Identified the need for interprofessional preceptor/supervisors at patient care events and service learning activities as a policy issue. • Built relationships with stakeholders at state associations of nursing, medicine pharmacy, as well as students, faculty, and deans of health science colleges. • Negotiated with stakeholders during the legislative interim to achieve a bill proposal acceptable to stakeholders. Though a similar policy died in 2015 due to opposition, adequate relationship building and collaboration on language of the bill to address stakeholder concerns, all stakeholders were in support of the 2019 version of the bill. • Legislative sponsorship, key steps in the legislative process. • Organizing lobbying and testimony with appropriate messaging. • The poster will also provide resource information and lessons learned for student and professional advocates from the learned experience of a student advocate.

Results: HB 1726 passed the Washington State Legislature with no amendments or opposition. Institutions in Washington State are currently planning policies to implement the parameters of the bill for student led service learning patient care events and interdisciplinary educational opportunities.

Implications/Conclusions: This policy promotes interprofessional service learning at patient care events and can be applied to educational opportunities. Policies promoting interdisciplinary interaction at the student level can help to build critical relationships between health care professionals. As health care delivery continues moving toward a team-based approach, it is pertinent to provide opportunities for students to experience professional collaborative models.

244-Effectiveness of State-Level Methamphetamine Precursor Regulations on Clandestine Lab Arrests. Sparkmon W, Ramachandran S, Bentley J, University of Mississippi. Email: wpsparkm@go.olemiss.edu.

Objective: In response to the growth of crystal methamphetamine abuse, the Combat Methamphetamine Epidemic Act (CMEA) was passed by the Federal government in 2005 to limit the purchase of methamphetamine precursors to 3.6 grams per day and a 30-day limit of 9 grams of regulated medications. However, some states have implemented stronger state-level methamphetamine precursor regulations than the CMEA in terms of their daily and 30-day sales limits, or making precursors available by prescription only. The objective of this study is to evaluate the effect of the CMEA and state-level methamphetamine precursor regulations on lab arrests.

Methods: State-level clandestine lab arrest data were obtained from the Drug Enforcement Agency (DEA) for the years of 2004 through 2014. Lab arrests were sorted by state and by year and states with stronger laws were identified by the year the stronger regulation went into effect. Initial information regarding legislation surrounding pseudoephedrine-containing products was obtained from the National Alliance for Model State Drug Laws report on each state's laws. State regulations were examined to establish year of implementation of stronger precursor regulations. In this report, daily and 30-day limits were compared to the Federal statutes in the CMEA. Data management and analysis was conducted using SAS version 9.4. Bivariate analyses were used to compare average number of arrests per year in states with and without strengthened regulations. Fixed effects regression methods for longitudinal data were used to assess discontinuities in elevation and slope resulting from the implementation of strengthened state regulations. The dependent variable was the number of clandestine lab arrests per year in each state and the model adjusted for state (fixed effects). Thus, the model tested the immediate and long-term effects of more stringent state-level regulations on lab arrests.

Final Results: The initial results of our study found that since the implementation of the CMEA, average clandestine lab arrests per state have decreased overall. Over the examination period, the proliferation of clandestine labs shifted from the western United States to the Midwest and south. On average, during the years when a strengthened law was in effect, states had 102.8 more arrests than states where the law was not stronger than the CMEA ($p = 0.068$). The results of the fixed effects regression show that the number of arrests has decreased over time ($p = 0.055$) and states that implemented strengthened regulations noticed a significant additional immediate drop in the number of arrests following implementation ($p < 0.0001$). However, the slope capturing the trend over time showed no significant added effect of stronger state regulations ($p = 0.772$).

Implications/Conclusions: Stronger methamphetamine precursor regulations are associated with a significant decrease in clandestine lab arrests. States looking to control the production of domestic crystal methamphetamine may benefit from implementing policies stronger than the CMEA. Further research is needed on the impact of varying levels of dose limits and prescription-only methamphetamine precursors.

245-Community Pharmacist Perception of Opioid Use After 2018 Prescribing Reform. Strake E, St. Louis College of Pharmacy, Karpman L, Schnucks Markets Inc., Tennyson N, Kehl K, Steppleman D, Allen S, Schnucks. Email: ejstrake@schnucks.com.

Objective: To assess community pharmacist perception of the efficacy of opioid reduction due to the new Missouri regulations within 18 months of implementation. Background: Community pharmacists are in a vulnerable yet impactful position to address the US opioid epidemic. On August 28, 2018 the Missouri Senate passed Bill 826 which enforced a seven-day supply of opioids for first time diagnosis and treatment of acute pain for most conditions. The results will create a complementary score for the multi-factorial process of opioid control, described as: decrease in opioid prescription frequency, alternative treatment options utilized, patient acceptance of therapy changes, and the localized impact that pharmacist are experiencing.

Methods: A survey was distributed via Google Form to an estimated 290 licensed pharmacists practicing at a grocery store chain community pharmacy in Missouri. Reminder notifications were sent via email weekly. Pharmacists were excluded if they worked <24hrs per week in Missouri, have practiced <2 years from the time of survey distribution, work specifically with pain management, or work at other sites outside of the company. Participant responses were documented based on a 5-point Likert scale, with 1 representing decrease/strongly disagree and 5 representing increase/strongly agree. The final survey consisted of 21 questions, of which, 5 questions assessed participant demographics and 16 questions assessed the perception of opioid use relative to updated regulations. The final survey was piloted by 5 community pharmacists to address quality of wording, question order, and potential bias. These 5 pharmacists responses were not included in the final analysis. Descriptive statistics will be performed for all variables. Perception will be dichotomized into two groups (strongly disagree, disagree, neutral) and (neutral, agree, strongly agree) determined by question designation.

Results: Research is in progress.

Implications: The study will provide insight on pharmacists perception of opioid use in Missouri, creating an opportunity for education of pharmacist, prescribers, and patients.

Marketing and Management

246-Healthcare Personnel Engagement with Drug Information Communication and Marketing Strategies in a Large Physicians' Network. Hincapie A, Berryman E, MacKinnon N, Damachi U, University of Cincinnati James L. Winkle College of Pharmacy, Neff E, St. Elizabeth Phycians, Grove K, Merkle, Inc. Email: ana.hincapie@uc.edu.

Objective: Drug information communication and messaging is essential to provide guidance to key audiences that will inform best evidence-based decisions. Drug information assists providers in the decisions about screening, diagnostics, treatment, and recommendations for patients. Although most drug information messaging and marketing targets prescribers, it is unclear how other health care personnel in primary and specialty care offices engage and share drug information and other materials such as drug samples. The objective of this study was to identify and describe current practices of drug information communication and marketing strategies engagement by prescribers and non-prescribers at an integrated network of providers.

Methods: This was a sequential explanatory mixed methods study. Medical assistants, RNs or LPNs that provide longitudinal care management services, primary care, and specialty providers from a large providers' network were invited to complete a 30-item online questionnaire. The questionnaire elicited preferred sources of drug information, current management of drug information at offices, and perceptions and preferences on drug samples, coupons, and drug rep visits. Subsequently, qualitative data were collected through semi-structured interviews. Participants were purposively recruited, and a semi-structured topic guide was developed based on survey results. Semi-structured interviews were audio-recorded, transcribed, and coded. Data were analyzed using descriptive statistics (quantitative) and using content analysis (qualitative).

Results: Eighty-two participants completed the survey (65% response rate). Of these, most were females (79.3%), office managers (26.8%), and individuals employed for 15 years or longer within the organization (30.5%). Most participants (85.3%) indicated that drug industry representative visits are the most common source of drug information. Paper-based material was the most frequent form in which information was received in physician offices (62.2%). Medical assistants were usually responsible for handling drug information (46.3%) upon arrival in the office compared to 15.3% of physicians. Drug representative detailing and lunches (62.2%) were the desired method of drug information communication followed by electronic mail or e-journals (11%). Data from nine interviews revealed variation on how offices manage drug representative visits, drug information, and samples. Many interviewees reported a mixed model of representative visits including provided meals during drug information sessions as well as drop-by visits which included provision of samples and/or printed materials. All offices indicated that samples were taken to a designated area, but processes for distribution to patients differed. When drug information was delivered via drop-by visit, this information was commonly placed on provider desks within the office by the medical assistant. Despite 60% of respondents in the initial survey stating drug information was saved for later use, there was no identified process for storage and distribution at any office and was greatly dependent on the provider's instructions.

Conclusions: Our study highlights the significant involvement of non-prescriber personnel in drug information engagement and management at primary and specialty care offices. Participants perceived that drug reps have an important role in keeping the offices informed and supplied with relevant drug information, coupons, and samples. Findings suggest that the development of centralized

guidelines to standardized practices in primary care networks should include non-prescriber personnel input.

247-Focus Groups to Enhance Campus Outpatient Pharmacy Clinical Services. O'Neal K, Johnson E, Smith M, Hines M, Boudiette V, University of Oklahoma College of Pharmacy, Ross M, University of Oklahoma Price College of Business. Email: katherine-oneal@ouhsc.edu.

Objective: The objective of this study is threefold: (1) Identify awareness of campus pharmacies and services offered; (2) Determine perspectives on what is expected from pharmacy services and what can be provided; and (3) Identify facilitators and barriers, including resource-related, attitudinal, situational, and other factors to utilization of campus pharmacies. The health sciences campus houses three outpatient pharmacies owned by the College of Pharmacy. These pharmacies provide services outside of traditional dispensing. A survey initiated by the Faculty Senate Spring 2019 identified that there was room for improvement in raising awareness and utilization of these pharmacies. Identifying healthcare provider and campus employee perspectives will greatly aid in the enhancements of the pharmacies to better meet the needs of the health sciences campus.

Methods: This study involves the use of two focus groups of prescribing health care providers and employees of the health sciences campus. Each focus group will be comprised of up to 10 health care providers or employees. A different focus group question set will be utilized to conduct in-depth, semi-structured interviews for providers versus employees. The recruitment strategy involves a purposive approach based upon knowledge by the investigators, coupled with snowball sampling. An email will be sent out to all employees to recruit participants. Focus groups will be moderated by one investigator, and an interview guide will be utilized to help guide conversation during the focus group sessions. All sessions will be digitally recorded and then transcribed to allow for identification of recurring themes. The transcriptionist will be a person who was not present for interviews or focus groups and completed transcriptions will be reviewed by a second person for accuracy and completeness. This study is IRB approved.

Results: The focus groups are ongoing with the last one scheduled October 23, 2019. Data is on target to be analyzed and presented for APhA Annual Meeting.

Implications/Concerns: Identifying healthcare provider and campus employee perspectives will greatly aid in the enhancements of the pharmacies' clinical services to better meet the needs of the health sciences campus. Additionally, this information can be utilized by other outpatient pharmacies, especially those affiliated with educational institutions, in recognizing barriers and exploring clinical opportunities for utilization of clinical services.

248-Assessing Various Outreach and Marketing Strategies to Improve Utilization of Pharmacist-prescribed Hormonal Contraception. Rhoten A, UCSD Skaggs School of Pharmacy and Pharmaceutical Sciences, Luli A, Mnatzaganian C, UC San Diego Skaggs School of Pharmacy and Pharmaceutical Sciences, Nguyen H, Carr R, Charette C, Ralphs Pharmacy. Email: arhoten@ucsd.edu.

Objective: The objective of this study is to determine the impact of various outreach and marketing strategies on utilization rates of pharmacist-prescribed hormonal contraception services across a grocery-store pharmacy chain. Currently, ten states in the United States allow qualified pharmacists to prescribe hormonal contraception via state protocols or collaborative practice agreements. It is unknown what role outreach and marketing plays in utilization and public awareness of pharmacist-provided hormonal contraceptives. Implementing a variety of outreach and marketing strategies throughout a grocery-store pharmacy chain will allow for improved understanding of the role the strategies have on utilization of pharmacist-provided hormonal contraception offered in a community pharmacy.

Methods: Various outreach and marketing strategies have been implemented to advertise pharmacist-provided hormonal contraceptives in 463 grocery-store pharmacies across seven states. Patients who obtain hormonal contraception are required to fill out an intake form and will indicate how they heard about the service by selecting one of the following outreach/marketing strategies: 1) in-store advertisement 2) pharmacy website 3) pharmacy staff 4) family/friend referral or 5) other (with a fill-in option). Participating pharmacies will be required to remove any patient-identifiable information and fax the form to the principal study investigator at a secured fax number. Data will be collected by reviewing the intake form; outreach and marketing strategies will be tallied from the intake form and recorded for all participating pharmacies. The primary outcome in this observational study will assess the strategies over a period of eight weeks compared to a period of eight weeks preceding the implementation(s) where no strategies were used. Secondary outcomes will determine comparisons among regional pharmacy locations and patient age. Statistical analyses will be completed with t-tests with alpha priori <0.5.

Final Results: Pending.

Conclusions/Implications: Pending.

249-Evaluation of Brief Messages to Steer a Meningococcal Group B Vaccine Multimedia Educational Campaign on a University Campus. Sprando A, University of Pittsburgh, Coley K, Berenbrok L, Carroll J, University of Pittsburgh School of Pharmacy. Email: acs164@pitt.edu.

Objective: The objective of this project is to evaluate Meningococcal Group B (MenB) vaccine-and disease-centered messages that will steer a multimedia educational campaign on a university campus. This project aims to identify brief messages that are most likely to trigger a strong call to action in college students to receive MenB vaccination. College students are five times more likely than non-

college students to contract meningitis due to their close living quarters and intimate interactions with peers. Meningococcal vaccines required for admission to most colleges only protect against serogroups A, C, W and Y. Since 2011, MenB disease caused 100% of all meningococcal disease outbreaks on US college campuses.

Methods: Individuals at a large academic institution, 18 years of age and older were eligible for inclusion. Students were recruited through distribution of an online survey. The content of the online survey was developed using the health belief model as a guide. The health belief model was created to understand and address the failure of individuals to adopt disease prevention strategies or compliance with medical treatments. The health belief model has also been used to address and overcome barriers associated with vaccinations. The health belief model addresses the following six components: perceived susceptibility of the individual, perceived severity of the disease, perceived benefits of the intervention, perceived barriers to the intervention, cues to action, and self-efficacy. Survey questions were developed to elicit student opinions on all six domains of the model. The survey content was developed through multiple iterations and evaluations from faculty and student researchers. The survey asked participants to rank ten test messages in order of most to least likely to influence a behavior change. Finally, participant demographics, university enrollment status, and housing type were collected. The online survey was designed using Qualtrics (Provo, UT) and disseminated via social media, a university-specific online forum, and a university student web portal. Data collection will take place August-October 2019. Completed surveys will be analyzed using descriptive statistics to identify the strongest messages. This project was designated as not human research by the university's Institutional Review Board.

Preliminary/Final Results: To date, 240 survey responses have been recorded. Data collection and analysis is ongoing.

Conclusions/Implications: Awareness and education highlighting the importance of MenB vaccination is critical to prevent MenB disease in college students. The results of this project will help steer a multimedia educational campaign at a large academic institution and can serve as a model for other academic institutions nationwide. Educational campaigns with effective messaging for college students may increase MenB vaccination rates and decrease MenB disease incidence across the country.

Maternal, Child, and Women's Health

250-Knowledge of the New Pregnancy and Lactation Labeling Rule among Pharmacists. Alem G, Ohanele C, Wingate L, Maneno M, Daftary M, Ettienne E, Howard University College of Pharmacy. Email: mary.maneno@howard.edu.

Objective: Effective June 30, 2015, the United States Food and Drug Administration (FDA) replaced the ABCDX pregnancy risk categories with the new Pregnancy and Lactation Labeling Rule (PLLR). The ABCDX categories were previously used to classify the safety of drugs for the use of pregnant women, nursing mothers, and women of reproductive age. The new PLLR consists of more detailed and vital information, for patients and providers to better assesses drug-related benefits and risks for pregnant women, nursing mothers, and women of reproductive age. The objective of this study was to assess factors associated with knowledge of the new FDA Pregnancy and Lactation Labeling Rule (PLLR) among Pharmacists

Methods: A cross-sectional study was done to evaluate knowledge of the new FDA PLLR among pharmacists. Data collection and online survey administration was done through Qualtrics. The primary outcome for this study was knowledge of the FDA PLLR. Items on knowledge was guided by credible information statements on the two pregnancy labeling systems found in the NIH and FDA websites. Other study factors included social demographics, pharmacy specialty, advanced certification, active licensure, state of licensure, practice setting, number of years in practice, direct patient care, and prescribing authority. Descriptive statistical analysis was conducted for all study variables. Simple and Multiple Linear regression analyses were conducted to assess predictive factors of knowledge of the FDA PLLR. All analyses were conducted using SPSS version 25 at an alpha value of 0.05.

Preliminary Results: A total of 131 Pharmacists participated in the study. Overall, participants were predominantly female (61.8%), did not complete a residency (80.9%), did not hold a BCPS license (90.1%), worked in the community pharmacy setting (39.7%), and provided direct patient care to women who are pregnant or of reproductive age (58.9%). The mean number of years in practice was 7.5 years (SD ± 10.1 years). The mean knowledge score percent for respondents of the old Pregnancy Letter Category System was higher than the mean knowledge score percent for the new PLLR. Findings from the regression analysis showed that there were statistically significant higher mean PLLR knowledge scores in females ($p<0.05$) and higher mean PLLR knowledge scores in participants that scored higher on the old pregnancy letter category system ($p<0.05$). Lower mean PLLR knowledge scores were associated with participants working in the community pharmacy practice setting ($p<0.05$) and participants with a greater number of years in practice ($p<0.05$).

Conclusion/Implications: Overall, the study findings provide some insights and identify gaps in pharmacists' knowledge regarding the new PLLR. Strategies should be implemented to provide pharmacists with up to date knowledge on the new PLLR.

251-Design and Implementation of a Pharmacist-Directed Preconception Care Outreach Program. DiPietro Mager N, Ohio Northern University. Email: n-dipietro@onu.edu.

Objective: Preconception care refers to interventions that can improve a woman's health as well as pregnancy outcomes through prevention and management of biomedical, behavioral, and social risk factors. It is important that all women of childbearing age receive preconception care, regardless of pregnancy intention, as approximately half of all pregnancies in the U.S. are unintended. Pharmacists and student pharmacists can play key roles in the provision of preconception care. While pharmacist provision of

preconception care in traditional healthcare settings has been reported, there have been no published examples of pharmacists providing such services through outreach efforts in the community. The purpose of this project is to examine the feasibility and potential impact of a pharmacist-directed preconception care outreach program.

Methods: A pharmacist-directed outreach program focused on preconception care was developed, following the model proposed for preconception health services which is: 1) risk identification; 2) education, and 3) intervention. In order to identify patient-specific risks, women completed a brief, one-page questionnaire based on preconception care recommendations from the Centers for Disease Control and Prevention. Once a woman completed the questionnaire, she received personalized written and verbal counseling from a pharmacist, pharmacy resident, or supervised student pharmacist. This counseling informed her whether she met health goals as established by national guidelines and entailed education, interventions, and/or referral to local resources to address her preconception healthcare needs. Women who indicated on the questionnaire interest in how to have a healthy baby received an additional handout and applicable verbal counseling. The project was IRB-approved.

Results: To date, the outreach program has been implemented at four community events such as county fairs and festivals in conjunction with the services of a mobile health clinic. One hundred thirty-five women ages 18-45 years have been impacted by the outreach program thus far. The following health risks have been identified among participants: tobacco use (20%), not taking a multivitamin/folic acid daily (67%), and insufficient physical activity (75%). The following barriers to receipt of routine healthcare were also reported: no insurance (11%), unable to get an appointment (13%), no transportation (11%), too busy (33%), and unable to take time from work (19%). Ten percent of women reported wanting information on how to have a healthy baby. So far, five pharmacists, two PGY-1 pharmacy practice residents and over 25 student pharmacists have worked together to deliver the outreach events.

Conclusions/Implications: The outreach program was feasible to implement, with over 130 women participating. Many preconception health-related needs that can be impacted by pharmacist education or intervention were identified; in addition, multiple barriers to receipt of routine healthcare services were reported. Outreach programming in the community can help fill gaps in preconception healthcare, especially for patients who are not receiving such care in traditional healthcare settings. Student pharmacists engaged in these outreach events gained valuable experience in patient assessment and counseling, providing them opportunities to strengthen their skills. There is great potential for pharmacists and student pharmacists to improve maternal and child health outcomes through provision of preconception care across various venues.

252-Examination of FDA Pediatric Regulations: Inclusion of Pediatric Participants in Clinical Trials. Ly A, Uniyal A, USC International Center of Regulatory Science, Church T, Regulatory and Quality Sciences. Email: lyannie@usc.edu.

Objective: To encourage a greater presence of pediatric information on drug labels, the U.S. Congress passed the Best Pharmaceuticals for Children Act (BPCA) in 2002 and the Pediatric Research Equity Act (PREA) in 2003. The BPCA requires the U.S. Food and Drug Administration (FDA) to produce an annual list of approved drugs requiring further pediatric clinical trials. Selection is based on availability of safety and efficacy information concerning the pediatric population, the need for additional information, whether new pediatric studies concerning the drug may produce health benefits in the pediatric population, and whether reformulation of the drug is necessary. In 2012, BPCA and PREA policies were adopted through the approval of the FDA Safety and Innovation Act (FDASIA); providing the FDA greater oversight to ensure PREA requirements are met. Even with these FDA regulations in effect, the Center for Disease Control and Prevention (CDC) reports more than 60,000 children visit U.S. emergency rooms because of adverse effects of antibiotics. Such data illustrate the need for understanding how drugs impact children and adolescents and emphasize the importance of proper pediatric dosage and labeling. Effective regulation of pediatric medications continues to be necessary to ensure the safety and well-being of adolescents. Objective: To assess the impact of BPCA.

Methods: The list of drugs approved under the BPCA in 2018 were gathered from FDA.gov. Then information regarding studies for each drug were collected from clinicaltrials.gov and categorized as follows: studies involving both pediatric and adult populations, studies involving only the pediatric population, and studies involving specific pediatric sub-populations. Patient demographics were collected and assessed for commonalities and trends.

Results: In 2018, 13 drugs were approved under the BPCA. Assessment of information for these drugs, indicates a lack of standardization in terms of which ages constitute which pediatric sub-population even though guidelines for sub-populations already exist. As result of these inconsistent parameters, the presentation of data also remains unclear, making it difficult to assess across and within age cohorts. Instead, information for each drug was examined separately for pediatric inclusion. After assessing all 13 drugs, there is a clear lack of pediatric representation in clinical trials involving adult and pediatric populations and a paucity in the inclusion across all pediatric sub-populations (neonate, infant, children, and adolescents) (Table 1).

Significance and Future Research: This lack of pediatric inclusion in clinical trials makes it difficult for medical professionals to properly prescribe medications; the dosage for an adult is not the same for a pediatric patient. Although more effort is warranted towards including the pediatric population in clinical trials, more research is necessary to explain the disparity. To develop a broader picture of the current landscape, drugs approved under the BPCA from 2012 to 2017 will be assessed for the inclusion of the pediatric population and sub-populations. Future research will inform the development of pediatric drug regulations to enhance the safety and efficacy of medications used in the pediatric population. It will provide an unbiased model to compare against the FDA's labeling information database.

253-Factors Associated with the Utilization of Pharmacists as Informational Resource Among Women of Reproductive Age. Maneno M, Alem G, Olbert B, Daftary M, Ettienne E, Wingate L, Howard University College of Pharmacy. Email: mary.maneno@howard.edu.

Objective: Estimates show that as high as 88.8% of women use medications during pregnancy. With pharmacists being among the most accessible health care providers in the community, it is important to evaluate their utilization as a medication information resource. This study will examine the patient characteristics associated with the utilization of pharmacists as a medication information resource among women of reproductive age.

Methods: A cross-sectional evaluation of baseline characteristics, collected during an online knowledge intervention study, will be conducted. Recruitment and data collection for the original knowledge intervention study was done through Qualtrics. Eligible women were required to reside in the United States, be of reproductive age and be fluent in English at the time of the survey. Surveys were sent from 2018 to 2019 and a seven-dollar incentive was provided. For this study, the primary outcome was defined as a survey-reported use of pharmacists as a medication information resource. Descriptive statistics for all study variables will be estimated. Study factors of interest will include socio-demographics, anxiety about medication information discrepancies, receiving complete medication information from doctors, receiving complete medication information from pharmacists, requiring assistance reading hospital materials, having problems learning about a medical condition because of difficulty understanding written information, pregnancy status and number of pregnancies. Simple and multiple logistic regression analyses will be used to evaluate predictors of utilization of pharmacists as a medication information resource. All analysis will be conducted using IBM SPSS Statistics version 25 at an alpha of 0.05.

Preliminary R**esults**: There were 210 women of reproductive age (18 to 44) who were included in the study. Of them, 68 (32.4%) were currently pregnant and 61 (29%) have a child less than one-year old. The average age of women recruited in the study was 32.4 ± 6.5. The majority of participants were White (69.5%), female and were married/cohabiting (74.7%). Additionally, over half were from rural areas (52.9%) and had at least a high school education (97.1%). On initial analysis of medication information sources, participants reported obtaining information on medication safety from their family physician (58.6%), gynecologist (41.4%), pharmacist (54.3%) and through the internet (47.1%). CONCLUSIONS: This study hopes to demonstrate the impact pharmacist play as a medication resource among women of reproductive age in the United States.

254-Safety and Efficacy of Crisaborole in Infants Aged 3 to <24 Months With Mild-to-Moderate Atopic Dermatitis. Schlessinger J, Skin Specialists PC, Omaha, NE, Shepard J, Ohio Pediatric Research Association, Dayton, OH, Gower R, Marycliff Clinical Research, Spokane, WA, Su J, Monash University and Murdoch Children's Research Institute, Melbourne, VIC, Australia, Lynde C, University of Toronto and Lynde Institute for Dermatology, Markham, ON, Canada, Cha A, Pfizer Inc., New York, NY, Ports W, Purohit V, Pfizer Inc., Groton, CT, Takiya L, Werth J, Zang C, Vlahos B, Pfizer Inc., Collegeville, PA. Email: jshepard@ohiopediatricresearch.com.

Objective: Crisaborole ointment, 2%, is a nonsteroidal phosphodiesterase 4 inhibitor for the treatment of mild-to-moderate atopic dermatitis (AD). Although crisaborole is approved for ages ≥2 years, this is the first study to evaluate use of crisaborole in patients <2 years of age with AD. The objective of this phase 4, open-label study was to evaluate the safety and efficacy of crisaborole in infants aged 3 to <24 months with mild-to-moderate AD.

Methods: Patients aged 3 to <24 months with baseline Investigator's Static Global Assessment (ISGA) of mild (2) or moderate (3) and percentage of treatable body surface area (%BSA) ≥5 received open-label crisaborole twice daily for 28 days. Safety was the primary endpoint, including assessment of treatment-emergent adverse events (TEAEs), serious TEAEs, electrocardiography (ECG), vital signs, clinical laboratory test results, and clinically significant changes in height and weight. Efficacy endpoints were exploratory.

Final Results: In total, 137 infants were included. Mean age (SD) was 13.6 months (6.42; range, 3-23), 88 (64.2%) patients were male, 61.3% had moderate ISGA, and mean %BSA was 28 (range, 5-94). All-cause TEAEs were reported for 88 (64.2%) patients; 48 (35.0%) patients had mild TEAEs. Treatment-related AEs were reported for 22 (16.1%) patients. 4 (2.9%) patients discontinued study drug because of TEAEs, entered the follow-up phase, and completed the study, including 1 patient with a serious TEAE of febrile seizure (not related to treatment and the only serious TEAE reported). The most frequently reported (≥5%) all-cause TEAEs were pyrexia (9.5%), upper respiratory tract infection (7.3%), diarrhea (7.3%), dermatitis atopic (6.6%), dermatitis diaper (6.6%), and cough (5.1%). Treatment-related treatment area AEs reported for ≥4 patients were application site pain (n=5; 3.6%), application site discomfort (n=4; 2.9%), and erythema (n=4; 2.9%). No new safety signals were identified in clinical laboratory findings, vital signs, ECG, or height and weight. 30.2% of patients achieved ISGA success (ISGA of clear [0]/almost clear [1] with ≥2-grade improvement) at day 29, with 20.0% having achieved it at the first postbaseline assessment (day 8). 47.3% of patients achieved ISGA clear/almost clear at day 29, with 40.7% achieving it at the first postbaseline assessment (day 8). Mean (standard error [SE]) Eczema Area and Severity Index (EASI) score decreased from 11.8 (0.72) at baseline to 5.0 (0.50) at day 29 (mean percentage of change, −57.5%). Mean (SE) %BSA decreased from 28.1 (1.88) at baseline to 12.4 (1.18) at day 29 (mean change, −15.2). Mean (SE) Patient-Oriented Eczema Measure (POEM) total score improved from 14.8 (0.52) at baseline to 6.1 (0.48) at day 29 (mean change, −8.5).

Conclusions/Implications: Crisaborole was well tolerated in this open-label study of infants aged 3 to <24 months with mild-to-moderate AD. The frequently reported TEAEs are common illnesses typically observed in this patient population. Application site pain/discomfort was reported at rates similar to those in crisaborole studies in patients ≥2 years of age. No new safety signals were identified. Improvements from baseline in exploratory efficacy endpoints were observed at the first postbaseline assessment (day 8)

and continued through day 29.

255-Effect of a Simulated Activity on Readiness, Ability to Use, and Confidence in Applying the PPCP to Contraceptive Prescribing. Stewart-Lynch A, Duquesne University School of Pharmacy, Lynch S, Binghamton University School of Pharmacy, Griffin B, Vest K, Midwestern University Chicago College of Pharmacy. Email: selynch@binghamton.edu.

Objective: Several states permit pharmacist prescribed hormonal contraception. Practicing pharmacists identify lack of confidence and training as barriers to engaging in this activity. The objective of this study was to assess the impact of a novel simulated activity on student pharmacists' readiness for, ability to use, and confidence in applying the Pharmacists Patient Care Process (PPCP) in accordance with the United States Medical Eligibility Criteria to a patient seeking contraception.

Methods: Quasi-experimental study conducted among student pharmacists enrolled in therapeutics courses at two colleges of pharmacy. Students completed a hormonal contraceptive prescribing activity following traditional didactic instruction. Students collected information from standardized patients in groups, then individually developed a patient care plan. Scores from the assignment were analyzed to assess student abilities in the safe and appropriate prescribing of contraceptives for simulated patients. A survey instrument was administered prior to the workshop and then again after it's completion. The survey measured self-reported confidence in performing actions related to each step of the PPCP and perceived preparedness in prescribing hormonal contraceptives. Chi-square and Mann-Whitney U tests were used to analyze categorical variables and Likert-scale data, respectively.

Final Results: The activity was completed by 238 students. The mean score on the workshop activity was 86% (median was 90%). There was a significant change in pre and post student confidence of ability to complete the process ($p<0.0001$) with less than 60% of students expressing confidence in all steps of the PPCP at baseline (collect -59%, assess -48%, plan -52%, implement -40%, and follow-up/monitor -52%), and over 80% expressing confidence at follow-up (91%, 87%, 88%, 87%, 82%). The majority of students at baseline (52.2%) and at follow up (53.2%) reported a need for more practice during APPEs to feel prepared. There was a significant change in the number of students in agreement with the statement, "I feel prepared based on the training I have received through my school's curriculum". At baseline, 15% were in agreement compared to 28.7% after completion of the workshop ($p=.00614$). Of the 17 students scoring <80% on the activity, 6 (35%) stated "I feel prepared based on the training I have received through my school's curriculum."

Conclusions/Implications: Student performance as assessed by the median score suggests students are able to safely and appropriate prescribe contraception in a simulated activity. The lab activity increased student reported confidence in their ability to complete each step of contraceptive prescribing as it relates to the PPCP. Although a majority of students felt unprepared without additional practice, the activity did move some students towards readiness for contraceptive prescribing. Although student performance was generally strong, over one-third with low scores demonstrated overconfidence despite poor performance. Expectations of students desiring more practice during APPEs may not be met unless the experience takes place in a locale where this practice is widespread; suggesting a gap between training and responsibilities in practice. Additional training is needed to ensure those engaged in the activity are adequately prepared.

256-Impact of a Hormonal Contraceptive Training Program for Pharmacists. Thomas R, Vest K, Midwestern University Chicago College of Pharmacy, Lynch S, Binghamton University, Stein A, Midwestern University. Email: kvestx@midwestern.edu.

Objective: Several states have passed legislation allowing pharmacists to prescribe hormonal contraceptives. Pharmacists have reported that they would like more training in areas such as general contraceptive information, identification of medical contraindications, and contraceptive counseling. Many states require completion of an approved training program in order for pharmacists to prescribe hormonal contraceptives. In 2017, American Pharmacists Association (APhA) launched an online module-based four-hour continuing education hormonal contraceptive prescribing training program for pharmacists (https://www.pharmacist.com/increasing-access-hormonal-contraceptive-products). Midwestern University and Binghamton University faculty members have partnered with APhA to evaluate the effectiveness of this program. The objective of this research is to evaluate participant knowledge and perceptions about pharmacists prescribing hormonal contraceptives before and after program completion.

Methods: All pharmacists who register for the APhA Hormonal Contraception training program and consent will be eligible participants. These participants will be assessed on their pre-and post program knowledge scores and will be surveyed about their opinions pre-and post program. Through a research partnership with APhA and the researchers, de-identified survey responses will be shared. Surveys will be administered by APhA using Qualtrics software. The survey will be ongoing, however the results reported at this time will span January 2017 to June 2019. Data analysis will be supported by a university biostatistician and will include descriptive and inferential statistics.

Preliminary Results: Between January 2017 and June 2019 there have been 166 participants in the program (154 participants completed the pre-survey and 118 participants completed post surveys). In the pre-survey, 15 participants (9.7%) stated they were very comfortable evaluating a patient for contraceptive use as compared to 32 participants (27.1%) in the post survey. Further analysis of perceptions and knowledge scores is currently underway.

257-Examining the relationship between pharmacist hormonal contraceptive prescribing authority and infant mortality rate.. Vo D,

Dickens M, Dinh A, Purdue University. Email: dickensm@purdue.edu.

Objective: The primary objective of this study is to determine the relationship between rate of infant mortality per 1000 births among states with pharmacist hormonal contraceptive prescribing authority, states with pharmacist collaborative practice agreements, and states with no prescriptive authority. The mother's bridged race/Hispanic origin, level of education, and age can affect rates of unintended pregnancy. Children conceived from unintended pregnancies may have increased risk of birth defects and lower weights, potentially increasing rates of mortality. In 2016, Oregon and California implemented pharmacist hormonal contraceptive prescribing authority, while Colorado initiated pharmacist hormonal contraceptive prescribing authority in 2017. Oregon has demonstrated that pharmacist hormonal contraceptive prescribing has proved successful in averting unintended pregnancies, resulting in cost-savings and improving mother's quality of life in Medicaid patients. Due to the paucity of published data regarding the impact of pharmacist hormonal contraceptive prescribing authority, this study is designed to determine the potential relationship between access to hormonal contraceptives from pharmacists and rate of infant mortality.

Methods: A cross-sectional study design will use the Centers for Disease Control (CDC) Wonder database (available at wonder.cdc.gov) to retrieve infant mortality rate for 2016 and 2017 and compare differences in infant mortality rate per 1,000 births among states with pharmacist hormonal contraceptive prescribing authority, states with pharmacist collaborative practice agreements for hormonal contraceptive prescribing, and those states without any pharmacist prescriptive authority for hormonal contraceptives. The CDC Wonder database is a public database that provides infant birth and death rates for each state, including the District of Columbia (DC), collected by the National Center for Health Statistics (NCHS) from 2007 to 2017. Data collection will be conducted by three investigators using a standardized excel sheet exported by the CDC Wonder database. Each data entry point will be independently confirmed by at least two investigators. Data collected from each state will include infant death rate per 1000, births (%); mother's race (Mexican, Central or South American, Non-Hispanic White, Non-Hispanic Black, or Non-Hispanic Other), mother's marital status (married or unmarried), age range of the mother in years (under 15, 15-19, 20-24, 25-29, 30-34, 35-39,40-44, 45-49, 50 and older) , mother's level of education (8th grade or less, 9th-12th grade with no diploma, high school graduate or GED completed, Bachelor's degree, Master's degree, or Doctorate degree), and mother's single race (American Indian or Alaska Native, Asian, Black or African American, White, or more than one race). Regression analysis will be used to determine potential relationships among the variables. Review has been sent to Purdue Institutional Review Board (IRB) and pending approval.

Preliminary Results: A search revealed California, Colorado, and Oregon were three states with pharmacist hormonal prescribing authority implemented in 2016 or 2017, 48 states with pharmacist collaborative practice agreements, and three states without any pharmacist prescriptive authority.

Implications/conclusions: To be presented.

258-Clinical Use of Pyridoxal-5'-Phosphate For Infantile Epilepsy: A Systematic Review. Yoon S, Mattingly A, University of Maryland, School of Pharmacy. Email: amattingly@rx.umaryland.edu.

Objective: The purpose of this systematic literature review is to evaluate the efficacy of pyridoxal-5'-phosphate for the treatment of epilepsy in neonatal and infantile populations. Epilepsy in neonates and infants can result in critical conditions if not treated promptly. Based on etiology, there are many different treatment options available. One etiology is due to a vitamin B6 deficiency because of genetic or metabolic causes. There are several forms of vitamin B6, but pyridoxine is the most common form used for epileptic patients. However, some patients are not responsive to pyridoxine or anticonvulsants. There have been reports of using pyridoxal, the active form of vitamin B6, instead of pyridoxine for these non-responsive patients. A review of the evidence is required to improve patient outcomes and to raise awareness of possible treatment options.

Methods: A systematic literature review was conducted of studies which have used pyridoxal-5'-phosphate as a treatment for neonatal and infantile epileptic disorders. The search strategy consisted of controlled vocabulary and keywords for three concepts: epilepsy, seizure; neonates, infants; and pyridoxal-5'-phosphate. Articles were searched in PubMed, Embase, and the Cochrane Library through August 21, 2019 and were limited to English language.

Results: Results were exported to EndNote and duplicates were removed. Two reviewers independently completed title and abstract screening, full text screening, and data extraction in Covidence, and any conflicts were resolved by a third reviewer. Experimental studies, observational studies, and case-series were considered for inclusion.

Conclusion: The primary outcome was whether pyridoxal use resulted in cessation of seizure or recurrence. Secondary outcomes were duration, severity, frequency of seizures, and adverse effect profiles.

Medical Home

259-Developing and Implementing a New Clinical Pharmacist eConsult Service in a Statewide Primary Care Organization. Mulrooney M, Smith M, Vuernick E, Thurston J, University of Connecticut, School of Pharmacy. Email: marie.smith@uconn.edu.

Objective: The objectives were to (1) characterize the use of on-demand pharmacist eConsults by primary care prescribers (PCPs) in a federally-qualified health center (FQHC), (2) categorize the type of pharmacist recommendations made, and (3) determine the PCP implementation rate of recommendations. There is a growing shortage of PCPs and only 18% of PCPs reported working with a clinical

pharmacist in their practices. Pharmacist eConsults are asynchronous communications between a PCP and a clinical pharmacist within a secure web-based platform. Pharmacist eConsults provide PCPs with pharmacotherapy expertise to enhance medication-related care quality and safety. Pharmacist eConsults are a promising technology to reduce PCP workload burden with complex medication questions.

Methods: Retrospective, cross-sectional reviews of all 57 pharmacist eConsults sent from August 2018-April 2019 were performed. Participants included PCPs (MD, DO, PA, APRN) from a FQHC with 14 adult primary care locations in Connecticut. 109 PCPs were offered the pharmacist eConsult service and one pharmacist answered all eConsults. PCPs received an email announcement of the eConsult service, followed by a webinar orientation that outlined the criteria and workflow. Patient-specific questions asked by PCPs were answered by the clinical pharmacist's assessment/recommendations and returned within 2 business days. Descriptive statistics and chi-square tests were used for data assessment. Data was compared across PCP types and practice sizes. Data analysis included: a) patient/provider demographics, b) quantity of individual questions asked, c) reasons for the eConsult, d) medication-related problems (MRPs), e) types of recommendations, and f) pharmacist recommendation implementation rate.

Final Results: Overall, 57 Pharmacist eConsults with 123 distinct questions occurred. Most (60%) e-consults involved female patients and 65% of patients were taking ≥7 medications. A total of 24 PCPs utilized the pharmacist eConsult service (16 APRNs; 7 MDs; 1 DO). APRNs sent 44 eConsults (77%); MDs/DOs sent 13 (23%). APRNs asked 94 questions (76%), MDs/DOs asked 29 (24%). Most APRN eConsult questions related to adverse drug events/drug interactions (44%) followed by reaching chronic condition goals (18%), compared to only 10% and 7% for MDs/DOs, respectively. Most MRPs pertained to medication safety (34%) and effectiveness (31%). 13 (54%) PCPs that used the service sent 1 eConsult, 5 (21%) sent 2-3 eConsults, and 6 (25%) sent > 4 eConsults. The pharmacist made 256 recommendations. Most medication optimization recommendations were for changing medication regimens (69%) and ordering labs/diagnosis tests (18%). Recommendations for medication regimen changes included adding a medication (33%), changing a dose/interval (23%), discontinuing a medication (20%), and substituting another medication (18%). 42 (74%) pharmacist eConsults were implemented within 3 months; 10 (17%) were not documented; 4 (7%) were refused by the patient; 1 (2%) was pending upon data collection conclusion.

Conclusions/Implications APRNs sent ~3.5 times the number of eConsults and over 3 times the number of separate questions compared to MD/DOs. Nearly 50% of prescribers utilized the eConsult service more than once. Most eConsult MRPs focused on medication safety and effectiveness. This study demonstrates a way for PCPs to have access to a clinical pharmacist's expertise and positions pharmacists as pharmacotherapy specialists in an eConsult network.

260-Primary Care Non-Provider Medication-Related Workflow Mapping to Identify Medication Safety Issues. Smith M, Univ of Connecticut School of Pharmacy, Sacro K, Value Care Alliance. Email: ksacro@vca.oeg.

Objective: In primary care (PC) settings, studies have reported that 74–90% of preventable medication-related problems are associated with provider or system-influenced gaps in care, including lack of evidence-based prescribing, clinical inertia, incomplete/inaccurate medication lists, inadequate drug monitoring, poor care coordination across multiple providers, and inconsistent monitoring and care plan management between PC office visits. However, little is known about medication-related tasks and workflows that involve non-providers such as nurses, medical assistants, and office staff. The PCMedSafety framework elucidates the interrelationships between PC delivery systems, common medication-related workflows, and medication safety outcomes. PCMedSafety encompasses Donabedian's framework for structure, process, and outcomes, as well as SEIPS 2.0 human factors for studying and improving the work of healthcare staff and patients. We applied this framework to identify non-provider medication-related workflow processes. The objective was to identify and categorize PC medication safety gaps and deviations in common medication-related workflows that are carried out by PC non-providers.

Methods: A pilot project was conducted in a community PC practice that did not employ a pharmacist. The practice employed 1 full-time physician, physician assistant and nurse practitioner, and 2 part-time physicians. Approximately 7,000 patients were attributed across all providers. The core non-provider staff consisted of 2 registered nurses (RNs), 4 medical assistants (MAs), and 4 telephone operators (TOs). The practice's physician leader identified 4 common medication-related workflows in the PCMedSafety framework that involved several tasks completed by non-providers (i.e., RNs, MAs, TOs). These medication-related workflows were: (a) medication reconciliation, (b) warfarin medication management, (c) vaccination administration, and (d) medication renewal requests. Paper data collection forms were used by 3 trained pharmacy students to observe the non-provider medication-related workflows. Each workflow form captured the date/time of observation, type of staff member observed, and a list of data elements specific to each workflow. Observed workflow process maps were created for the 4 medication-related activities and were evaluated by 2 pharmacists to identify critical medication safety workflow gaps (omissions), deviations, and potential or actual adverse drug events.

Results 111 separate observations were recorded over 6-weeks across all workflows, totaling 100 observation hours. The medication reconciliation workflow had 17 (49%) gaps/deviations related to problems with data verification, data documentation, and patient communication methods. For warfarin medication management, there were 6 gaps/deviations and 73% of observations indicated that RNs initiated medication dosage changes without consulting a PCP and no well-defined protocol was established; this resulted in one serious adverse drug effect. Vaccinations had 9 (26%) gaps/deviations related to lack of verification of patient's identity, patient allergies, or past vaccine reactions/intolerances. For medication renewal requests, no critical medication safety gaps occurred; 3 critical medication safety workflow deviations occurred due to inaccurate documentation and inadequate RN-patient

communications.

Implications/Conclusions: PCMedSafety framework identified several structural elements (e.g., tasks, team roles, training, use of standardized workflows) that impact medication safety. Non-providers need additional training and supervision on medication-related activities. Workflow-specific protocols may ensure consistency across all PC staff (including non-providers). The practice implemented training and protocols for warfarin management; other improvement recommendations were considered for future implementation.

Medication Management

261-Medication use Evaluation for Intravenous Acetaminophen use in a Tertiary Teaching Hospital. Corcoran K, University of Iowa College of Pharmacy. Email: katelyn-corcoran@uiowa.edu

Purpose: Since the initiation of the 2011 intravenous (IV) acetaminophen (APAP) formulary restriction at a 325-bed tertiary care hospital, providers are required to order intravenous acetaminophen as a non-formulary medication in addition to other acetaminophen forms if desired for use. The purpose of this drug use evaluation was to determine intravenous acetaminophen usage and to assess adherence to formulary restrictions.

Methods: A retrospective drug utilization evaluation was performed on inpatients who received a dose of IV acetaminophen between June 1st, 2018 – May 31st, 2019. A medication usage report was generated from the electronic medical record. The following data points were collected: ordering provider, admission dates, admission indication, drug indication, procedure type, procedure duration, time of IV APAP administration relative to start of surgery, preoperative APAP administration time, and perioperative oral medication administration time.

Results: Two-hundred and twenty-four orders were collected. Of those, 21 (21%) of elective adult surgical patients, 33 (42%) of inpatient adult surgical patients, 11 (73%) of inpatient adults, and 24 (73%) of pediatric patients were outside of protocol.

Conclusion: Use of intravenous acetaminophen has decreased since the formulary restriction in 2011. Areas for further evaluation of IV APAP use include pediatric orders, and inpatient surgical patient orders.

262-Identifying the Scope of Drug Therapy Problems in Community Settings Through Comprehensive Medication Therapy Management Strategies. Dinunno C, Salvo M, Buckley T, University of Connecticut School of Pharmacy. Email: marissa.salvo@uconn.edu.

Objective: This study conducted practice-based research in a state-wide setting to analyze and evaluate the implications of drug therapy problems (DTPs) encountered during comprehensive Medication Therapy Management (MTM) sessions with pharmacists and patients at participating community pharmacies in Connecticut.

Methods: MTM certified pharmacists in 30 independently owned community pharmacy chains conducted up to four MTM visits over a 12-month period. Patients targeted for MTM sessions were adults with hypertension and/or diabetes living in urban, low income, or underserved communities with significant health disparities. DTPs were assessed at each patient encounter and classified into four major categories: appropriateness, effectiveness, safety and adherence of therapy. Pharmacists identified DTPs in a systematic manner in which nonadherence is the final DTP identified, ensuring it is a true nonadherence DTP. A variety of methods were implemented by pharmacists to try and resolve DTPs, including contacting prescribers, providing education counseling and patient education, and administering vaccinations.

Final Results: 1,788 DTPs were identified in 354 patients (five per patient); 79.5% of DTPs were health systems issues, while 20.5% were patient-based (adherence) issues. The most common DTPs identified were issues of medication appropriateness (n=744), followed by issues with medication effectiveness (n=352). Pharmacists fully or partially resolved 77% of DTPs: the majority were resolved through pharmacist counseling (40.26%), and the majority unresolved were due to the physician not accepting the pharmacist recommendation (40.46%). Pharmacists' clinical success in the program is evidenced by 39% and 23% improvement in BP and A1c goal attainment, respectively.

Conclusion: While the scope of DTPs in the inpatient setting is well documented, these problems transcend institutional care and cross over to the community setting as well. With nearly 80% of DTPs identified as health systems issues, community pharmacists are uniquely positioned to address barriers and solutions in a changing health delivery landscape. With the majority of DTPs out of the patient's control, pharmacists throughout the community setting play an integral role in optimizing medication safety, efficacy, administration, and adherence. This type of innovative community pharmacy practice-based research will support future reimbursement opportunities in evolving models of health care delivery optimization.

263-An Evaluation of Medication Therapy Management with Blister Packaging on Optimization of Care for Patients with Hyperlipidemia and Hypertension. Dunn N, Rhodes L, Marciniak M, University of North Carolina at Chapel Hill, Abode A, Baird A, Holland C, Realo Discount Drug. Email: aabode@realodiscountdrug.com.

Objective: Patients who are non-adherent to antihypertensive or statin medications have a higher risk of hospitalization or death. There is a need for processes and tools to help patients with cardiovascular disease increase medication adherence, which could thereby improve clinical outcomes. In collaboration with the state Department of Health and Human Services, an independent

community pharmacy implemented a clinical service which combines adherence (blister) package initiation with a comprehensive medication review (CMR) for patients with hypertension and hyperlipidemia. As a part of this service, the pharmacist conducts an initial CMR and provides follow-up at 1-, 3-and 6-months following blister pack initiation. The pharmacist provides recommendations to both providers and patients aimed at optimizing drug therapy, monitoring, and lifestyle factors. The primary aim of this study is to evaluate responses to pharmacist recommendations from prescribers and patients with hyperlipidemia or hypertension made pursuant to a CMR and adherence pack initiation. Prescriber recommendations include those related to medications such as blood pressure or cholesterol lowering medications or aspirin (i.e., initiation, discontinuation, or dose adjustments). Recommendations to the patient include home blood pressure monitoring and smoking cessation, as appropriate. A secondary aim is to evaluate the impact of adherence packaging on blood pressure for patients with uncontrolled hypertension at baseline compared with three months after adherence pack initiation.

Methods: This is a retrospective review of data collected during a five-month period of this clinical service. Data will be included if it is for a person 18 years of age or older with hypertension or hyperlipidemia who received a CMR with adherence pack initiation. Data will be extracted from an intervention tracking system utilized by the pharmacist during the medication review which collected: patient demographics, clinical and laboratory data, lifestyle factors, atherosclerotic cardiovascular disease risk, frequency of provider recommendations, and medication adherence (defined as medication possession ratio, MPR). Blood pressure readings at initiation and at 3-months will be compared to evaluate whether a correlation exists between use of adherence packs and achieving blood pressure goals. De-identified data will be exported to a Microsoft Excel spreadsheet. Descriptive statistics will be used to evaluate data.

Preliminary Results: Institutional Review Board approval is anticipated in October 2019. Data extraction will occur in November 2019, with data analysis in January and February 2020.

Conclusions/Implications: This study will evaluate a clinical service which provides in-person medication management and comprehensive lifestyle education in conjunction with adherence packaging. The aim of this service is to evaluate the impact of a community-based pharmacist on optimization of pharmacotherapy, monitoring, and lifestyle when incorporating a CMR into adherence packaging initiation for patients at risk for cardiovascular disease.

264-Assessing New Jersey Hospitals' Responses to the Upcoming Heparin Shortage. Elias M, APhA-ASP, Gawargi L, Armanious M, Wageh J, Fahim G, N/A. Email: loragawargi@gmail.com.

Objective: Heparin is a life-saving anticoagulant used to treat venous thromboembolism, including deep venous thrombosis and pulmonary embolism, as well as ischemic events such as acute coronary syndrome. A key heparin ingredient is derived from the mucosal tissues of pig intestines. In August 2018, the African Swine Fever reduced the swine herd population in China, threatening the major supply of the vital heparin raw material in the United States (US). The goal of this project is to report and assess the proactive steps taken by New Jersey hospitals' pharmacists in response to the heparin supply shortage.

Methods: A cross-sectional 4-question google survey was developed based on literature review and previous research. The online survey was distributed via email; recipients included staff pharmacists, clinical pharmacists, and pharmacy directors representing major New Jersey hospitals. The contact information of the pharmacists participating thus far was obtained from the American Society of Health-System Pharmacists (ASHP) online residency directory as well as personal networks. In addition, the survey will be expanded to include all New Jersey hospitals; pharmacy directors' contact information will be obtained from their respective hospitals' directories. The survey queries when the pharmacists became aware of the shortage in order to evaluate their proactivity level. The survey also examines pharmacists' perception of the impact of the heparin shortage on patient care, assessing its severity and potential correlation with their respective plan of action. Finally, the survey collects information regarding the proactive measures that hospitals are taking to circumvent the potential harmful outcomes associated with the heparin shortage.

Results: Preliminary results include a total of twelve responses which was collected from ten New Jersey hospitals; hospital preliminary response rate is 36%. Current participants included one staff pharmacist, four clinical pharmacists, and seven pharmacy directors. The participants reported awareness of the shortage in the following timeframes: May 2019 (4), July 2019 (6), or August 2019 (2). Ten of the participating pharmacists have reported taking proactive steps. In addition, the survey evaluates the potential impact of the shortage on patient care which is measured on a scale of low, moderate, or high. Participants reported: low impact (1), moderate impact (7), or high impact (4). Eight of the responding pharmacists ordered heparin in bulk. Five pharmacists responded saying they would seek therapeutic alternatives to heparin such as direct oral anticoagulants. Three utilized alternative methods to procure heparin: strategizing with different manufacturers, closely monitoring prices or obtaining different heparin concentrations. Two pharmacists responded saying they would closely monitor the usage and periodic automatic replacement (PAR) inventory levels of heparin. Three pharmacists planned to reach out to providers and medical staff to recommend therapeutic switches. The results will be updated upon new response entries.

Conclusions: The survey has preliminarily shown that the majority of New Jersey hospitals participating in the survey are currently taking pragmatic steps to mitigate the negative impact of the heparin shortage on patient care. Upon additional entries, final analysis of the data will be reported.

265-Administration of Cenobamate via Enteral Tubes. Ferrari L, Nisman A, Pegan A, Ursino J, SK Life Science, Inc.. Email:

Anisman@sklsi.com.

Objective: Cenobamate (YKP3089) is a novel antiepileptic drug that is in development and under investigation for the treatment of adults with focal (partial-onset) seizures. The objective of this study was to examine the recovery of cenobamate suspension administered via nasogastric (NG) and gastrostomy (G) tubes. Administration of medications via the enteral route may be necessary in patients who are unable to swallow safely.

Methods: Suspensions containing 100 and 200 mg of cenobamate were created (10 for each dose) in 100-and 200-mL volumetric flasks, respectively. Cenobamate 100 mg and 200 mg film-coated tablets were placed in 60 and 120 mL of deionized water and mechanically shaken for ≥30 minutes until the tablets were completely disintegrated, followed by sonicating the cenobamate suspensions for 5 minutes. The cenobamate suspensions were injected slowly into 5 enteral tubes that were vertically standing: tube 1, a polyvinyl chloride dual lumen stomach tube (12 Fr); tube 2, a polyurethane neonatal/pediatric NG tube (6.5 Fr); tube 3, a silicon G tube (16 Fr); tube 4, a polyurethane G tube (16 Fr); and tube 5, a polyurethane NG tube (12 Fr). The suspensions were collected into 200-and 500-mL volumetric flasks, respectively, after passing through the tubes; tubes were tapped to retrieve any particles stuck inside. The original volumetric flasks containing the cenobamate suspensions were rinsed with 60 mL (100-mg suspension) and 120 mL (200-mg suspension) of deionized water; this liquid was also injected into the 5 tubes and collected in the 200-and 500-mL volumetric flasks. Acetonitrile, isopropyl alcohol, and trifluoroacetic acid were then added to the flasks then shaken for ≥60 minutes in a mechanical shaker until all clumps were disintegrated and sonicated for 5 minutes. Deionized water was added to obtain a final concentration of 500 and 400 mcg/mL. Next, 3 mL from each suspension was placed into a 10-mL volumetric flask, diluted to volume, and mixed well, resulting in final concentrations of 150 and 120 mcg/mL. All 20 solutions were filtered through 0.45-micrometer polytetrafluoroethylene syringe filters, discarding the first 2-3 mL; filtrates were collected for analysis via high performance liquid chromatography. The percent liquid chromatography (% LC) recovery of cenobamate was calculated for the individual solutions, and the mean % LC was determined for the duplicates.

Final Results: The % LC recovery of cenobamate from the individual 100-mg suspensions ranged from 96.2%-99.1%, with mean % LC recovery ranging from 96.3%-98.3%. The % LC recovery of cenobamate from the individual 200-mg suspensions ranged from 97.1%-102.6%, with mean % LC recovery ranging from 98.5%-101.7%.

Conclusions/Implications: The acceptance criteria of mean % LC recovery of cenobamate between 90.0% and 110.0% was met. As there was no significant drug recovery loss, this suggests that delivery of cenobamate suspension via NG and G tubes may be a viable alternative route of administration for patients who are unable to swallow safely.

266-Targeted Medication Review of Falls-Risk Medications in Older Patients: A Community Pharmacy Based Approach. Foster A, Lindenau R, Middleport Family Health Center, Clark C, Wahler R, University at Buffalo School of Pharmacy and Pharmaceutical Sciences. Email: linder26@dyc.edu.

Objective: The primary objective is to utilize community pharmacists to reduce the number of falls-risk medications (FRMs) prescribed in the geriatric population by performing targeted medication therapy management. In the United States, falls led to over 3 million emergency department visits, 962,000 hospitalizations, and approximately 30,000 deaths in 2016. Falls treatment expenditure in the healthcare system is about $50 billion per year. We hypothesize deprescribing FRMs will ultimately reduce these statistics and improve patient quality of life.

Methods: The study will take place at an independent community pharmacy. A report will be generated via pharmacy program software to identify patients who qualify for the study. Patients will be included in the intervention group if they: are > 65 years old, fill prescriptions at the study site, have active prescriptions filled in the past four months (from the date of report generation at start of study), and be enrolled in a specific local Medicare plan. Patients must have at least one of the following drug class related medications in their possession according to pharmacy fill history: first-generation antihistamine, benzodiazepine, non-benzodiazepine hypnotic, long-acting sulfonylurea, tricyclic antidepressants, skeletal muscle relaxants, or urinary incontinence associated antimuscarinics. Patients will be excluded if they are: found to never have picked up or taken the prescription for the targeted medication(s), residing in an assisted living or skilled nursing facility, under Hospice care, or non-English speaking. A pharmacist will contact patients in the intervention group via telephone for a targeted medication review outlining the risks of taking the falls-risk medication, and counseling on medication replacement options and discontinuation schedule. The patient will receive an educational follow-up letter outlining the conversation. The pharmacist will fax a letter to the prescriber with recommendations to replace or discontinue the medication. An Excel spreadsheet will be used to collect the following: patient demographics, baseline falls history, falls-risk medication(s), provider information, recommendation(s) made to the patient/provider, and recommendation status. Once the recommendation and follow-up are completed, the patient will be de-identified for reporting of results. The control group will consist of patients who qualify for the study but are not enrolled in the specific local Medicare plan selected in the intervention group. The control group will be matched to patients in the intervention group based on falls-risk medication and age (five-year range increments). The primary endpoint is the discontinuation rate (%) of FRMs as evidenced by the pharmacy fill history after three months (December 1, 2019 to March 1, 2020). Descriptive statistics will be used to compare demographics between the two groups. A Chi-squared test will be used to determine if there is a significant difference between the discontinuation rate of fall-risk medications in the intervention and control groups.

Results: In Progress The study is estimated to include 100 patients, 50 per group.

Implications/Conclusions: The authors aim to demonstrate that community pharmacists can have a significant impact on deprescribing FRMs in the geriatric population.

267-Identifying Drug Therapy Problems And Patient Related Barriers: Impact Of New-To-Therapy Calls Conducted At Day 3 Versus Day 25 From Patient Pick Up. Goff R, Watson T, Pharmax Pharmacy, Witt C, Pharmax Pharmacy; St. Louis College of Pharmacy. Email: caleb@pharmaxpharmacy.com.

Objective: The purpose of the study is to identify drug therapy problems with early versus late interventions for newly initiated medication therapy. Previous studies have only looked at new-to-therapy calls conducted at day 3 from initiation and compared to a control group that did not receive the intervention. The objective of this study is to compare interventions when follow up occurred three days after therapy initiation versus when follow up occurred 25 days after initiation. The secondary objectives include impact of these interventions on quality improvement recommendations for the program, along with the number of recommendations made to a provider and number of recommendations which led to a change in therapy.

Methods: This retrospective cohort study included data from October 1, 2019 until March 1, 2020. This study was conducted at two independent community pharmacies. One pharmacy offered standard care: a call three days after initiation of a new prescription. An additional pharmacy provided the new intervention. Patients in this pharmacy received a call 25 days following initiation of a new prescription. To participate in the program, patients were greater than 17 years of age, had a valid phone number in the system, and were prescribed a new drug entity with refills. Patients were not enrolled if the medication was not prescribed a quantity adequate to last 28 days of therapy, if the medication was indicated for pain control, if the mediation was a dosage or formulation change, if the medication was written for “as needed” usage, or if they were a member of a long-term care facility, skilled nursing facility, or if patient was receiving hospice care. Patients were also excluded if they were unable to be reached after three call attempts. Primary endpoint was discovery of a drug therapy problem with patient’s new medication. Drug therapy problem included duplication in therapy, drug-drug interaction, drug-disease interaction, administration error, intolerance to dosage form, perceived or actual adverse event, or primary or secondary non-adherence. Secondary endpoint was an evaluation of the program for changes based on these outcomes, as well as pharmacist experience, such as time spent per call, number of recommendations made to a provider, and number of recommendations which led to a change in therapy.

Results/Implications: Research in progress. Results will be presented at the APhA Annual Meeting.

Conclusions: The conclusions of this study can shed light on optimal timing for interventions to occur after initiation of a new medication therapy.

268-Trends and Pharmacist Interventions in Patients on Vancomycin with Supratherapeutic Trough Levels: An Observational Retrospective Study. Jamil R, Rahbani P, Inova Mount Vernon Hospital. Email: Peggy.Rahbani@inova.org.

Objective: The purpose of this study was to observe trends and incidences of supratherapeutic vancomycin trough levels to enhance pharmacist’s education and prevent future occurrences. Vancomycin is a widely used antibiotic for the treatment of gram-positive infections caused by Methicillin-Resistant Staphylococcus Aureus (MRSA). Pharmacists play a major role in ensuring that trough concentrations are maintained within therapeutic range to treat serious infections and prevent side effects.

Methods: This is an observational retrospective study conducted between June 1, 2018 to June 30, 2019 and data was collected using the electronic medical record system at one hospital. A total of 28 patients were noted to have supratherapeutic vancomycin trough levels (≥20mg/L) during this time frame. We included adult patients 18 years and older who had vancomycin levels ≥20mg/L during their admission. Patients on hemodialysis were excluded from this study. Baseline characteristics include age, sex, race, body mass index (BMI) and serum creatinine (SCr) represented as mean ± standard deviation. Pharmacist's interventions were reviewed and determined appropriate if they were in compliance with the Inova Vancomycin Dosing Guidelines. Furthermore, the number of patients with vancomycin-induced acute kidney injury (AKI) was based on the Infectious Diseases Society of America (IDSA) vancomycin-induced AKI definition.

Results: The majority of patients were elderly (age: 68.6 ± 11.4) and obese (BMI (kg/m2) 30.9 ± 10.9). The baseline SCr (mg/dL) for all patients was within normal limits: 0.85 ± 0.17. Patient's gender consisted of 16 females and 12 males, while race consisted of 15 Caucasians and 11 African Americans. A total of 28 pharmacist interventions were documented, of which 39% had the wrong frequency, 29% had incorrect dose recommendation, 25% had inappropriate timing for trough levels, and 7% had an unnecessary loading dose given based on the indication. Supratherapeutic levels mainly occurred while patients were admitted on the medical floors (57%) instead of the intensive care unit (11%). In addition, supratherapeutic troughs occurred during days three (29%), two (18%) or four (18%) of inpatient therapy. Overall, only one out of the 28 patients (4%) met the criteria for vancomycin-induced AKI.

Conclusion: During this review, we have identified that pharmacists have opportunities in optimizing vancomycin dosing and frequency recommendations in obese and elderly patients specifically during the first four days of inpatient treatment. Future state, a risk assessment tool for vancomycin-induced AKI is being implemented in the electronic medical record system to help providers identify patients with risk factors and decrease adverse events.

269-Improving Patient Outcomes by Providing Pharmacist Comprehensive Medication Management in a Primary Care Clinic. Kim M, Prudencio J, University of Hawaii at Hilo -Daniel K. Inouye College of Pharmacy. Email: jarred.prudencio@hawaii.edu.

Objective: The objective of this study was to identify the impact clinical ambulatory care pharmacists can have on improving patient outcomes by optimizing medication regimens. Pharmacist provided comprehensive medication management (CMM) has been shown to be beneficial in improving patient safety and cost-effectiveness.

Methods: CMM was provided by two ambulatory care pharmacists at a family medicine residency clinic. Each patient was referred to the pharmacist by a physician and scheduled for a 40-minute appointment. During the visit, the pharmacist provided a complete medication reconciliation, patient education, and optimization of medication regimens through a collaborative practice agreement which allowed ordering of non-controlled medications and laboratory tests. A retrospective review of was collected of all patients seen by the clinical pharmacists from January 1, 2018 through December 31, 2018.

Results: A total of 164 patients were seen and provided CMM over a total of 516 visits. The majority of patients seen by the pharmacists were diagnosed with diabetes (70%), but pharmacists addressed the patient's entire regimen and assisted in managing all chronic disease conditions. Average overall A1c change was -1.14%, although changes in A1c for patients when the pharmacist made interventions was -1.26%, and changes in A1c for patients with uncontrolled diabetes was -1.41%. A total of 106 discrepancies were identified during visits, with the most common being patient’s non-compliance or confusion with taking their prescribed medication regimen. Medications were adjusted a total of 373 times with 107 new medications started, 89 medications discontinued, and 177 dose adjustments. There was a total of 295 labs ordered with the majority of labs for A1c (44%). Other immeasurable duties of the service include consults from other providers in the clinic, warfarin management, and assistance with medication access.

Implications/Conclusion: Both pharmacists are residency-trained and hold faculty positions at a college of pharmacy. The service allows pharmacists to work directly in a clinic as a valuable part of the interprofessional patient care team. Other ambulatory care pharmacists would be able to implement a service similar to this in any family medicine clinic. This adds to the evidence that pharmacist-provided CMM services integrated in a family medicine clinic can improve patient outcomes. By having a progressive pharmacy service integrated in a medical residency, residents grow accustomed to pharmacist-provided CMM and may desire to continue to work with ambulatory care pharmacists in their future practices.

270-Evaluating university support in the sustainability of public health programs: The CT WISEWOMAN medication therapy management (MTM) program. Latta M, Rickles N, University of Connecticut. Email: nathaniel.rickles@uconn.edu.

Objective: The primary objective of this study is to evaluate the role of a university MTM support team in optimizing pharmacist delivery of MTM services and develop best practices for MTM support to facilitate greater MTM program feasibility and future sustainability. This will be accomplished by studying the CDC funded Well-Integrated Screening and Evaluation for WOMen Across the Nation, (WISEWOMAN) program. In Connecticut, WISEWOMAN provides MTM services to women who are hypertensive, low-income, and underinsured or uninsured by a multidisciplinary team of pharmacists, clinical health navigators, prescribers, and a university based MTM support team.

Methods: A mixed-methods approach was utilized to study communication, infrastructure, and team-based care in a CDC funded MTM program. Quantitative analysis of communication frequency and the time taken for documentation after MTM sessions across 2 clinical sites. Descriptive statistics were used for data analysis. 8 interviews were conducted with pharmacists, clinical health navigators, project managers, and Connecticut Department of Public Health program managers. Themes were identified from these interviews using an inductive approach.

Results: Time for documentation significantly decreased at each clinical site with the implementation of MTM support team. Between 2017 and 2018, pharmacists took an average of 9.9 days to input clinical documentation of MTM sessions. With the university MTM support team in 2019, the average number of days for documentation was 0.7, representing a 93% decrease. At one clinical site, the average number of days went from 9.7 days to 1.0 day for a 90% decrease and at the second clinical site, the average days decreased from 7.7 to 0.5 for a 95% decrease. Between 2017 and 2018, 38% of patient encounters were never documented compared to 100% in 2019. Quantitative analysis of electronic communication also found that pharmacists had a total of 213 interactions regarding patient interactions, while clinical health navigators only had 44 interactions. Professionals within the program reported the university MTM support team provided structure, assistance with scheduling, and reminders for documentation and patient recruitment during interviews. Communication style preference differed by individual rather than by clinical site. Perceived challenges involving patient recruitment was a common theme but perspectives of the problem differed based on their position (i.e. pharmacist, navigator, project manager). Another common theme was belief in the goal and impact of the program.

Implications/Conclusions: The university MTM support team improved practical aspects of MTM implementation including scheduling, building relationships, reminders to prioritize MTM sessions, and ensuring appropriate documentation. Another consistent theme was the need for improved patient recruitment strategies. Differences between communication style preferences indicates the need for the university MTM support team to consider site-specific needs and concerns. These results indicate that a university MTM support team is a viable solution for ensuring the successful implementation of state supported MTM programs. Future work will explore how the university MTM support team can improve recruitment approaches and facilitate expansion of the program to other locations across the state.

271-Population Health Pharmacist Recommendations for Uncontrolled Hypertension in a Primary Care Organization. Mulrooney M, Smith M, Vuernick E, University of Connecticut, School of Pharmacy. Email: marie.smith@uconn.edu.

Objective: The objectives were to (1) determine if patients with uncontrolled hypertension warranted a pharmacist's recommendation for elevated blood pressure (BP), (2) identify the primary care provider (PCP) implementation rate of population health pharmacist (PHP) recommendations, and (3) characterize the types of recommendations implemented by the PCP. Only ~54% of American adults with high BP have their condition controlled (BP <140/90). A significant factor in poor control rates is practitioner clinical inertia, defined as failure of providers to initiate/intensify therapy when guidelines indicate doing so. PHPs can play an important role in intensifying treatment to achieve patient BP control by providing hypertensive medication-related recommendations to PCPs.

Methods: Retrospective reviews of PHP assessments and recommendations from November 2018 to February 2019 were performed. Patients were identified from three primary care practices within a FQHC in Connecticut. Weekly patient lists was generated from an existing quality report database (BP ≥140/90) and filtered to only include patients with a scheduled provider appointment the following day. Following patient identification, a PHP completed targeted (hypertension) medication reviews two days a week at a centralized location. Patient-specific, medication-related recommendation(s) were communicated to the PCP the day before the patient's appointment via telephonic encounter so the PCP could review the recommendations and consider the implementation during the visit. Data analysis included: (1) number of patients that qualified for PHP recommendation(s), (2) reasons why no PHP recommendation was sent, (3) PCP implementation rate, and (4) types of recommendations that were made and implemented. Final

Results: Out of 215 patients identified, a total of 204 patients (those with a PCP appointment rather than a specialist appointment) were reviewed by the pharmacist with an estimated pharmacist time per patient of 10-15 minutes. For 115 patients, the PHP did not send a recommendation to the PCP; the main reasons included: a) BP was within goal at recent visit(s) (22%), b) new medication started/titrated at last visit (17%), c) no PCP visit in last 4-6 months (16%), d) BP medications managed by specialist (14%), and e) documented acute patient issue was addressed (12%). The PHP sent recommendations to the PCP for 89 patients; 38 (43%) of these recommendations were implemented by the PCP within a week of the appointment, 27 (30%) were not implemented, and 24 (27%) were still pending at least a month later (e.g. patient cancelled appointment). The most common pharmacist recommendations made and implemented included a dose increase [34 made (38%); 15 implemented (39%)], addition of a medication [31 (35%); 9 (26%)], and consultation on lifestyle/adherence [10 (11%); 8 (24%)].

Conclusions/Implications: PHP recommendations for patients with uncontrolled BP and a next-day PCP appointment had a 43% implementation rate. 63% of recommendations implemented aligned with intensifying treatment of hypertension (increase dose; add medication). Process improvements identified to increase pharmacist efficiency included excluding patients that have not seen their PCP in > 4 months and excluding patients whose BP is managed by a specialist. Further analysis can be continued to identify the effect of PHP recommendations on BP control over time.

272-Pharmacist-led Population Health Program to Improve Naloxone Prescribing for Patients Receiving Chronic Opioids in a Primary Care Population. Pitstick W, Murphy E, Beatty S, The Ohio State University College of Pharmacy, Mitchell V, The Ohio State University Wexner Medical Center Department of General Internal Medicine, Tayal N, The Ohio State University Wexner Medical Center Department of Internal Medicine / General Internal Medicine. Email: murphy.981@osu.edu.

Objective: The purpose of this study is to assess a population health management approach to increase access to naloxone in patients taking chronic opioid medications and evaluate the frequency of acquisition and utilization of naloxone within a primary care population. The objectives are to: (1) quantify the number of pharmacist recommendations that resulted in prescriptions for naloxone; (2) identify the number of patients trained by a pharmacist on how to use naloxone; (3) determine the number of these patients who acquire naloxone.

Methods: This study is a retrospective chart review of the electronic medical record (EMR) at a network of general internal medicine (GIM) clinics within a large academic medical center. Pharmacists at GIM clinics made targeted outreach to patients with morphine equivalent doses (MED) of 50 or greater to offer a naloxone prescription and training to the patient and family member on the effective use of naloxone. Contact with patients identified from the EMR report was attempted on at least 2 occasions by phone, secure email portal, or in person at office visits. In addition, a demonstration of how to administer naloxone with a training device was given along with a prescription for naloxone. This prescription for naloxone will be provided through coordination with the patient's primary care provider. Follow up with the patient's pharmacy was performed 3 months following the initial naloxone prescription to assess patient acquisition of naloxone. Information regarding the date of dispensing, number of refills dispensed, and patient copay were also collected at this time. Descriptive statistics will analyze the number of naloxone prescriptions, training sessions complete, naloxone prescriptions filled and dispensed, and the costs associated with naloxone attainment.

Preliminary Results: There were 220 patients identified from the EMR who were currently prescribed opioid medications greater than 50 MED daily. Interventions led by the pharmacy team at GIM resulted in 80 naloxone prescriptions. Additionally, pharmacists have trained 64 patients and family members on the effective use of naloxone. These efforts to enhance naloxone acquisition have resulted in the dispensing of 19 naloxone prescriptions to date, with ongoing analysis. Hypothesized barriers to patient procurement of naloxone are price and stigma associated with naloxone acquisition.

Conclusions/Implications: This study seeks to evaluate the impact of pharmacist-initiated naloxone training and dispensing to patients receiving chronic opioid medications. Improved patient access to naloxone is imperative for this population who is at enhanced risk for opioid-related toxicity and overdose. Pharmacists are valuable members of the care team and contribute in this setting through identification of at-risk patients, recommendations to prescribers, and education to patients and family members.

273-Impact of medication therapy management interventions in the discontinuation of aspirin in the elderly based on the 2019 ACC/AHA guideline recommendations. Putnam M, Walgreens / University of Houston College of Pharmacy, Varughese J, University of Houston College of Pharmacy, Coffey K, Thakkar M, Hudson R, Walgreens. Email: jvarugh4@central.uh.edu.

Objective: The antiplatelet properties of aspirin have been widely used as a preventive measure against cardiovascular diseases. However, new evidence has led the American College of Cardiology and American Heart Association (ACC/AHA) to recommend against the continuous use of aspirin in individuals 70 years old and older for primary prevention of atherosclerotic cardiovascular diseases. The objective of this study is to determine the impact of medication therapy management interventions from a community pharmacy setting on the appropriate discontinuation of aspirin in low-risk elderly patients based on the new ACC/AHA recommendations.

Methods: This study is being reviewed for Institutional Review Board approval. Aspirin use will be screened by a pharmacist or pharmacist intern during a medication therapy management interaction. Subjects enrolled in the study will include patients who are at least 70 years old with no history of cardiovascular diseases (CVD) and currently on aspirin for primary CVD prevention. Baseline characteristics will include age, gender, comorbid conditions, and modified HAS-BLED scores. For the intervention, the investigator will present the new ACC/AHA recommendations to the patient and ask to reach out to their physicians to discuss their aspirin therapy. At this time, the exact indication for aspirin use will be confirmed with the physician, and discontinuation will only be suggested if appropriate. Patients' acceptance will be recorded, and the aspirin discontinuation rate by the physicians will be determined. Should a physician opt for continuation of aspirin for primary prevention, the reasons for such will be documented.

Results: Research in progress.

Conclusion: Research in progress.

274-Medication management among individuals with neurodevelopmental disabilities (MMIND) survey. Rizvi-Toner A, Farris K, Mitrzyk B, Erickson S, Omichinski D, University of Michigan. Email: kfarris@umich.edu.

Objective: The objective of this study is to understand the processes and technologies used by young adults who have cerebral palsy (CP) or spina bifida (SB) to manage their medications. Young adults with neurodevelopmental conditions (NDCs) possess a greater need than the general population for medication management assistance in the form of medication administration cueing and side effect monitoring. The process of managing medications is complex, requiring specific cognitive and physical functional abilities. Little is known of the ability of individuals with these NDCs to manage their medications and the processes that they and their families/caregivers have developed.

Methods: This study utilizes a web-based, 20-minute survey administered to a convenience sample of individuals aged 12 to 32 years old who have SB or CP. Respondents are allowed assistance in completing it. Five questions inquiring about filling prescriptions, dealing with side effects, taking medications correctly, reordering in a timely manner, and calling the doctor for appointments were taken from the Transition Readiness Assessment Questionnaire (TRAQ). Remaining questions ask about paying for medications, support required to take medications, and technology's role in medication management. The survey allows for free text responses to questions about current medications taken, reasons for phone usage, and ways to use technology to enhance independency. Up to 250 participants will be enrolled from a large academic hospital ambulatory care setting and a state-wide disability organization listserv. Frequencies and descriptive statistics will be used to describe the respondents and to quantify medication management behaviors. Chi-square analyses will be used to explore the level of support respondents require for these behaviors and how technology may affect their independence.

Preliminary Results: To date, over 500 eligible individuals have been invited, 86 surveys have been completed and the survey is open until December 2019. 56% of respondents are female, and the majority have CP (77%;n=66) while 23% (n=20) have SB. The mean participant age is 24 (S.D.=5.55) years old. There is variability in the extent to which respondents always complete the following medication management behaviors on their own: 35% filling prescriptions; 36% dealing with side effects; 49% taking medications correctly, 33% reordering in a timely manner, and 35% calling the doctor for appointments. Specifically, when asked if they could take their medications correctly and on their own, 49% always do, 13% have started to, 9% do not but are learning, 2% do not know how but want to learn, and 27% do not know how. 38% of respondents use their mobile phone to help manage their health. Respondents most often report 'setting reminders or alarms on a device to alert them to administration time' as the type of technology they use to assist with medication management. Four respondents state that technology could not help them due to their severe levels of impairment and their inability to carry out physical activities.

Conclusions/Implications: Results are in progress and will provide a better understanding of the processes and technologies used by young adults with CP or SB to manage their medications.

275-Factors Associated with Longer Than Recommended Duration of Antibiotic Treatment in Women with Uncomplicated Cystitis at a Federally Qualified Health Center. Serrano W, Cylwik D, El Rio Health, Kennedy A, University of Arizona, Isais J, El Rio. Email:

kennedy@pharmacy.arizona.edu.

Objective: Acute uncomplicated cystitis is a common indication for antimicrobial therapy in otherwise healthy community-dwelling women (1). The 2010 update to the Infectious Diseases Society of America (IDSA) and the European Society for Microbiology and Infectious Diseases International clinical practice guidelines for the treatment of acute uncomplicated cystitis and pyelonephritis in women provides recommendations for the empiric treatment for acute uncomplicated cystitis. Studies from across multiple countries have demonstrated a wide variation in prescribing practices despite multiple guidelines for the optimal selection of an antimicrobial agent and duration of therapy (2-7). One common area of variation from guideline recommendations is duration of antimicrobial therapy. Longer than recommend duration of antimicrobial therapy is an example of inappropriate antimicrobial use which is associated with antimicrobial resistance (8). The primary objective of this study is to evaluate the prescribing practices of antimicrobial therapy for uncomplicated cystitis. The study will evaluate whether patients at El Rio Health in Tucson, Arizona are appropriately managed by guideline-recommended duration of antibiotic treatment and which factors are associated with receiving longer than recommended duration of treatment. The study's principal investigator will educate El Rio Health providers of the observed discrepancies between prescribing practices and clinical guideline recommendations.

Methods: Pending IRB approval, the study will be conducted at El Rio. Encounters for data collection will be limited to El Rio patients seen by an El Rio provider and receiving an El Rio antibiotic prescription within the August 2018-August 2019 timeframe. Patients with the following diagnoses will be pulled from the database: acute cystitis (N30.0-N30.01) and unspecified urinary tract infection (N39.0). Patients with pyelonephritis and factors that complicate a urinary tract infection will be excluded. Patient-specific factors including age, vitals, type of insurance, and number of concomitant medications will be collected. Provider-specific characteristics such as provider type and role (PCP or covering) will be collected.

Preliminary/Final Results: Currently undergoing the IRB review process.

Conclusions/Implications The findings of this study may inform antimicrobial stewardship interventions. We anticipate that reducing the inappropriate use of antibiotics through increased adherence to evidence-based medicine will decrease cost to the patient and health care system, decrease drug exposure in patients, and decrease risk of antibiotic resistance in the health care system.

276-Prospective study comparing naloxegol and alvimopan in preventing post-operative ileus in colorectal surgical patients. Shah V, Bon Secours Memorial Regional Medical Center / VCU School of Pharmacy, Collins R, Thompson W, Bon Secours Memorial Regional Medical Center. Email: Rebeccah_Collins@bshsi.org.

Objective: This MUE will compare the efficacy of naloxegol and alvimopan for the prevention of post-operative ileus in post-colorectal surgery patients. Naloxegol and alvimopan are mu-opioid antagonists that work peripherally in the gastrointestinal tract. Naloxegol is indicated for opioid-induced constipation while alvimopan is indicated for the prevention of post-operative ileus. Currently, alvimopan is listed at $198.11 per capsule while naloxegol is listed at $14.22 per tablet on Lexicomp. In 2018, a retrospective study was published comparing the two medications for post-operative ileus and length of stay in patients undergoing radical cystectomy. The analysis of that study concluded that naloxegol was comparable to alvimopan when it came to length of hospital stay. LOS in this retrospective study was 7.6 (± 1.85) days for alvimopan and 8.6 (± 2.1) days for naloxegol, which, after adjusting for age, stage of disease, sex, BMI, and length of time in surgery, was not significant ($p = 0.41$). Post-operative Ileus occurred in 29% of the alvimopan treated patients compared to 27% of the naloxegol treated patients. The recently published data on this study prompted us to change our ERAS order sets to use naloxegol in place of alvimopan for the prevention of post-operative ileus in post-colorectal surgery patients.

Methods: This MUE will include all patients 18 years of age or older having colorectal surgeries under the Enhanced Recovery After Surgery (ERAS) protocol. This will be a 90-day pilot program starting on 10/1/2019 and extending through 12/31/2019. Patients will receive a single dose of either naloxegol 25mg or naloxegol 12.5mg (if CrCl < 60ml/min) pre-operatively, then once daily until return of bowel function, hospital discharge or a maximum duration of 7 days. The collected data will be compared to a retrospective analysis of patients who received alvimopan following the same ERAS protocol. The time frame for the alvimopan data collection is June 2019 to August 2019 while the time frame for naloxegol data collection is October 2019 to December 2019. Data to be collected include the primary endpoints of length of stay and post-operative ileus, demographic variables, surgery type, time to first bowel movement, opioids received during the hospital stay in morphine equivalents, readmission rate, and mortality. A cost analysis will also be performed by analyzing purchase history. Data will be collected and analyzed using Microsoft Excel. Statistical analysis may include descriptive statistics, student t-test and/or Wilcoxon rank-sum tests.

Preliminary/Final Results: In progress.

Implications/Conclusions: If naloxegol proves to be non-inferior to alvimopan in preventing post-operative ileus, adopting naloxegol as the formulary agent for post-operative ileus has the potential to lower the cost burden for hospitals and patients receiving ERAS surgeries.

277-Assessment of Clinical Outcomes Following a Pharmacist-Delivered Comprehensive Medication Review for Patients With Type 2 Diabetes and Dyslipidemia. Stanislaw J, Bingham J, Warholak T, University of Arizona College of Pharmacy, Marupuru S, Taylor A, University of Arizona. Email: marupuru@pharmacy.arizona.edu.

Objective: Lack of chronic disease management services is associated with increased hospitalizations, healthcare costs, morbidity, and

mortality. Given the shortage of national healthcare providers, health plans rely on pharmacists to perform comprehensive medication reviews (CMRs). During these reviews, pharmacists make recommendations to optimize drug therapy and overall chronic condition management. A deficit exists in the literature regarding the impact of pharmacist-delivered CMR services on overall diabetes and dyslipidemia management. This study aims to demonstrate the clinical value of completing CMRs measured by improved laboratory values (lower hemoglobin A1c; lower low density lipoprotein (LDL); and, higher high density lipoprotein (HDL) levels) for type 2 diabetes (T2DM) and dyslipidemia management.

Methods: This retrospective review will include 545 eligible Medicare beneficiaries with type 2 diabetes. The data set will include age, gender, geographical state, alert name, alert reason, CMR completion date, HDL level, LDL level, A1c level, copay amount, person completing the CMR with the pharmacist, and number of chronic medications. Patients will be included if they are between 40 and 75 years of age, received a pharmacist-delivered CMR and had laboratory values documented pre-and post-CMR completion. Intervention group patients will be compared to eligible beneficiaries from the same health plan who did not receive a CMR (control group). The analysis will include 2018 patient health marker data at baseline (pre) and follow-up (6 months post CMR), provided by SinfoniaRx. A t-test will compare the outcomes of a pharmacist-versus prescriber-delivered CMR with the patient or their caregiver.

Results: In progress.

Implications/Conclusions: These results address a gap in the literature and have the potential to add to the evidence base regarding how pharmacist-delivered CMRs can improve diabetes and dyslipidemia management. Medicare Part C & D Quality Care Measures aim to improve diabetes care through blood sugar control and maintain physical health. While this study aims to provide initial evidence to support the value of pharmacist-delivered CMRs for this group of patients, these findings may apply to broader populations of patients served by Medicare health plans, in general.

278-Mobile Medication Therapy Management. Truong D, Golshani K, Arias C, Lear A, Zheng F, Nova Southeastern University. Email: kg791@mynsu.nova.edu.

Objective: The elderly population continues to increase. In 2015, the senior population was 617 million and is expected to double by 2050. Increasing age is related to an increase in comorbidities along with an increase in adverse events. It was found that one in every four senior Americans have either multiple comorbidities, barriers to medication adherence, or polypharmacy. The purpose of this project is to deliver medication therapy management services straight to patient's doorsteps to decrease the potential for drug-drug interactions, hospitalizations, and risk of serious adverse drug reactions that would otherwise not be provided due to patient specific barriers.

Methods: To conduct a search for information regarding these barriers, a systemic review was performed using academic electronic databases such as PubMed, Google Scholar, and Embase. Searches were limited to full text journal articles published in English relevant to medication management services within the last five years. The searches were narrowed down to human subjects equal or greater than 55 years of age. Keywords used included healthcare, medical access, disparity, delayed healthcare, medical needs, health inequality, healthcare cost burden, barriers to healthcare, medication therapy management, health education, medication reconciliation, mobile healthcare, transitions of care, polypharmacy, and obstacles in obtaining healthcare. Clinical trials, case reports, case series, literature reviews, and meta-analyses were gathered to assess which specific barriers may potentially hinder obtaining healthcare services, specifically medication therapy management for the elderly.

Results: Perceived barriers that were evaluated included transportation, financial costs associated with transportation, unreliable public transportation, distance, and restricted mobility. It was discovered that most mobile healthcare services are clinics providing immunizations, hypertension and/or diabetes management, and health screenings. Medication therapy management was mainly being offered to patients at doctor's offices and nursing homes by a pharmacist or pharmacy intern. Patients who partake in these medication therapy management services must travel to a specific location/destination in order to receive this service. Mobile medication therapy management would merge the gap between patients and the barriers that they encounter daily. This portable, innovative technology that is brought directly to patients will not only eliminate the main barrier that hinders these patients, but also provide optimal care to ensure patients are on appropriate therapy.

Conclusion: Medication therapy management is still emerging as a significant source of discovering drug related problems with pharmacists being at the forefront to resolve these issues. By identifying barriers that prevent the elderly from receiving optimal medication management care, steps can be taken in order to bridge any gaps that may be present. Since transportation appears to be a key issue in obtaining these services, mobile medication therapy management directly provide these services by going to the patient to ensure optimal therapeutic outcomes are met. By combining time efficient and hands-on consulting services, patients can receive the appropriate care. As this service becomes more refined and developed, other medical services such as immunizations, glucose and lipid screenings, and genetic testing may be implemented in the future with the medication services.

279-Assessment of Anticholinergic Medication Use in Geriatric Patients at a Rural Family Medicine Clinic. Turner R, Adelman M, Goodhart A, Barrickman A, West Virginia University School of Pharmacy. Email: megan.elavsky@hsc.wvu.edu.

Objective: The objective of this study is to assess the anticholinergic burden in patients older than 65 years old diagnosed with dementia and evaluate incidence of anticholinergic prescribing in this population at a rural family medicine clinic. The use of

anticholinergic medications in older adults is linked to cognitive impairment and an increased risk of dementia. Anticholinergics are a class of medications prescribed to individuals diagnosed with a variety of disease states (e.g. urinary incontinence, irritable bowel syndrome, etc.), which can be common diagnoses seen in older adults. Currently, the guidelines recommend that routine use of this class of medications should be discouraged in patients older than 65 due to the risk of adverse-effects. This is particularly important in individuals with dementia because anticholinergics have been shown to worsen the disease state and are positively correlated with later dementia diagnosis.

Methods: Patients will be identified through the electronic medical record and a list of patients diagnosed with dementia as of September 2019 will be generated. Information will be collected retrospectively. Patients will be included if they have a diagnosis of dementia and have established at the clinic. The primary outcome will be the prevalence of anticholinergic prescribing in a rural population in those diagnosed with dementia. Secondary outcomes will include identified overall anticholinergic burden and evaluation of risk factors which increase anticholinergic use. Information collected will include demographics (age, gender, past medical history), medication (anticholinergics and drugs with anticholinergic activity, duration of use, and number of medications), type of dementia, length of dementia diagnosis, documentation of any side-effects, number of provider visits in the last year, number of other co-morbidities, and Montreal Cognitive Assessment/Mini-Mental State Exam score. This research has been approved by the institution's IRB.

Preliminary/Final Results: Results are pending and will be presented at the meeting, if accepted.

Conclusions/Implications: Pending.

280-An Evaluation of Acid Suppression Therapy at Hospital Admission. Volgyi D, Moore H, McConachie S, APhA-ASP. Email: fo8589@wayne.edu.

Objective: Acid suppressive therapies (AST), such as proton pump inhibitors (PPI) and histamine-2 receptor antagonists (H2RA), have been linked to serious adverse events; however, over-prescribing of these therapies in hospital and community settings remains common. The purpose of this project is to determine the appropriateness and prescribing origin of inappropriate AST among newly admitted internal medicine patients.

Methodology: This is a retrospective, observational analysis of patients who received admission medication reconciliation and acid suppressive therapy during their stay at Beaumont Dearborn. Information was gathered from electronic medical records on medication administration and patient interview data. Appropriateness was determined using indication and duration criteria. Appropriate indications for AST included: gastroesophageal reflux disease, erosive esophagitis, prophylactic therapy for patients on concomitant high-risk medications, and other FDA-approved indications. Appropriate duration was determined using clinical guidelines and varied based on indication. Patients who tried to discontinue therapy but were unable to due to adverse effects were considered appropriate. Data was collected on PPI/H2RA use, dose, duration of therapy, and initial prescriber. Data was also collected regarding if the patient had ever seen a gastroenterologist, had gotten an esophagogastroduodenoscopy (EGD), or if the patient had ever attempted to stop their acid suppressive therapy. Descriptive statistics (n,%) were used to analyze the data.

Results: Of the 89 patients evaluated, 62 (69.7%) patients had appropriate indications for PPI/H2RA therapy, 12 (13.5%) patients had inappropriate indications, and 15 (16.8%) patients had no PPI/H2RA previously prescribed. Of these 15 patients who were prescribed a PPI or H2RA in the hospital, only 8 (53.3%) had appropriate indications for prescription. Of the 62 patients who had appropriate indications, only 21 (33.9%) had been seen by a gastroenterologist, only 33 (53.2%) had ever had an EGD done, and only 27 (43.5%) had ever attempted to discontinue therapy. Of the 62 appropriate patients, 15 (24.1%) had inappropriate duration of therapy. Of the 12 patients who had inappropriate indications, only 2 (16.7%) had been seen by a gastroenterologist, only 4 (33.3%) had ever had an EGD done, and only 5 (41.6%) had ever attempted to discontinue therapy.

Conclusions: A substantial portion of AST prescriptions identified in our study were inappropriate and used without proper diagnosis, follow up, or monitoring. Our results show that many patients are prescribed acid suppressive therapy and stay on this therapy for decades without gastroenterological follow up. This can increase the risk of adverse drug effects caused by these medications. Assessing and deprescribing AST medications in the outpatient setting may be a valuable role for ambulatory and community pharmacists.

281-The Impact of a Clinical Community Pharmacist on the Comprehensive Medication Review (CMR) Completion Rate for a Dual Eligible Special Needs Plan. Walsh T, Univeristy of Arkansas for Medical Sciences (UAMS), Scott N, Harps Food Stores Inc. Email: nscott@mtmthefuturetoday.com.

Objective: The Centers for Medicare & Medicaid Services (CMS) use various quality metrics to provide star ratings to Medicare plans across the country. The three types of special needs plans offered through CMS include: institutional, dual eligible, and chronic condition. Dual eligible plans enroll patients who are eligible for both Medicare and Medicaid. There are quality measures for Part C (Medicare advantage) and Part D (prescription drug plans). Each plan is awarded an overall star rating and individual star ratings for each quality measure. Some measures are specific to pharmacy (Part D quality measures), such as comprehensive medication review (CMR) completion rate (measure D-13). This measure is one that community pharmacists can have a high impact to increase reimbursement. In 2017, one Medicare plan did not involve community pharmacists in any capacity with CMR completion. In

November and December of 2018 and the entire year of 2019, the plan utilized a clinical community pharmacist to complete CMRs for the plan. The purpose of this study is to evaluate the impact a clinical community pharmacist can have on a dual eligible special needs plan's star rating for CMR completion.

Methods: This is a descriptive study in which the percentage of comprehensive medication reviews completed from 2017, 2018, and 2019 calendar years will be collected from a dual eligible special needs plan in Arkansas. In November and December of 2018 and the entire year of 2019, a clinical pharmacist completed and documented CMRs in accordance with CMS standards for eligible members identified by the plan. The members were either residing in a long-term care facility or at home. All data will be obtained through Acumen reports from CMS, which provide data for star ratings. The plan will also provide data including total number of beneficiaries, total number of beneficiaries eligible for the CMR service, and if the beneficiaries resided in a long-term care facility or at home. Statistical analysis will include descriptive statistics and a Chi square test to compare the percentage of CMR completion for 2017 and 2019.

Results: Research in progress.

Conclusions/Implications: Research in progress.

282-Benefit-Cost Analysis of Recommended Pharmacological Interventions based on Standard Clinical Endpoints in Cystic Fibrosis: A retrospective chart review. Wiechert R, Stenberg K, Lager B, Loy J, Foundation Care LLC. Email: kathleen.stenberg@foundcare.com.

Objective: To determine the monetary value of a CF-focused patient management program (PMP) to patients and payers by maximizing treatment regimen for patients with CF.

Background: According to the Cystic Fibrosis Foundation Patient Registry, approximately 20 to 40% of patients with CF are not receiving guideline recommended therapy (CFFPR Annu Data Rep. 2016). PMP was implemented at a specialty pharmacy, in which participants undergo pharmacist-led clinical chart assessment to evaluate CF treatment regimens and patient adherence. Based on previous research, the efficacy of recommended treatment has been established; however, the impact of a CF-targeted PMP on economic outcomes has not been sufficiently studied.

Methods: A systematic literature review was conducted via PubMed using CF and one of the following terms: azithromycin (AZM), hypertonic saline (HS), dornase alfa, and cost analysis. Inclusion criteria were: English full-text, 1994-2018, and subjects 6 years and older. Articles selected evaluated medication effect and/or monetary value of improvement on CF clinical endpoints: FEV1, hospitalization for pulmonary exacerbations (PE-IP), IV antibiotic use, and missed days of work. The 2016 CFFPR and Bureau of Labor Statistics (BLS) was referenced to obtain statistics on the clinical parameters. Patients enrolled in PMP between 5/5/17 and 5/5/18, aged 6 to 65 years with a diagnosis of CF, or receiving a CF exclusive medication, were identified as the study population. Pharmacologic interventions to add AZM, HS, or dornase alfa were incorporated into the benefit-cost analysis (BCA).

Results: A total of 486 articles met inclusion criteria. In addition to resources stated above, 14 articles were used to populate medication effect and monetary value on the stated clinical parameters. Results showed a 1% increase in FEV1 equates to $252 in cost savings (Gu Y, et al. Eur J Health Econ. 2005;16, 709-17). The mean cost per PE-IP was $45,361 (Rubin JL,et al. Curr Med Res Opin. 2017; 33:4, 667-74). The average daily cost of home IV therapy was $122 (Dalovisio JR, et al. Clin Infect Dis. 2000; 30:4, 639-42). BLS 2017 hourly wage of $21.42 was utilized to evaluate costs of work days missed. Based on previous research of the medication benefits for the clinical endpoints and average cost, net benefit-costs for initiation of AZM, HS, or dornase alfa were estimated at $12,540, $7,089, and -($71,709) respectively. A total of 3535 patients met inclusion for the BCA. Recommendations consisted of 701 for AZM, 423 for HS, and 188 for dornase alfa leading to a net benefit-cost of $8,790,540, $2,998,647, and -($13,396,504) respectively. Of the 1,312 recommendations made, only 27 were accepted by physicians.

Conclusions: Due to low acceptance rate of interventions, actual net benefit-costs were $230,097 for AZM and HS, and -($213,744) for dornase alfa. Further identification of data on dornase alfa benefit on clinical endpoints is needed. Additionally, strategies to improve physician involvement in PMP will increase the number of patients receiving recommended care, and subsequently increase cost savings. Further analysis is planned to evaluate PMP effects on the clinical endpoints in Phase 2 of the study.

283-Analysis of E.coli Antibiotic Resistance in Urinary Tract Infections at a Tribal Hospital. Yun M, Wright L, Boschult S, Winnebago Comprehensive Healthcare System. Email: lexa.wright@ihs.gov.

Objective: The objectives of this study are to: (1) assess urine cultures and sensitivity results to determine the antimicrobial resistance of urinary tract infections (UTI) caused by Escherichia coli (E.coli) and (2) use the antibiotic resistance data to update the antimicrobial guidelines at a tribal health facility.

Methods: In this retrospective study, patients will be identified based on positive urine culture results for UTI caused by E.coli. Informed consent for patient data was waived in this study. Data was obtained from a rural, tribal hospital's electronic health records from September 2018 through August 2019. Data collection included patient demographics, E.coli antibiotic resistance cultures, and the number of patients switched to alternate oral antibiotic therapy based on cultures and sensitivities. Antibiotic resistance trends will be calculated based on the E.coli urine culture results.

Preliminary/Final Results: Preliminary results show a trend in E.coli antimicrobial resistance to first-line UTI antibiotic treatments,

including sulfamethoxazole/trimethoprim and ciprofloxacin. Results will be reported as descriptive statistics and will include percentages of antibiotic resistance for each oral drug option and the number of patients requiring a change in drug therapy.

Conclusions/Implications: The results of this study will provide insight into the E.coli antibiotic resistance trends which will improve UTI therapy recommendations. These results will be used to update the antimicrobial therapy guidelines for UTI treatment at a tribal health facility.

Medication Reconciliation

284-Implementation and Evaluation of a Certified Technician Training Program for Advanced Technician Services in a Large Community Pharmacy Chain. Huster S, Barnes B, Frede S, Johnson A, Kroger Health, Johnson K, University of Cincinnati/ Kroger Health. Email: brenda.barnes@stores.kroger.com.

Objective: Current pharmacy standards and state laws identify that advanced clinical and operational tasks can be completed by pharmacy technicians. However, adoption of technician role advancement has been slow. Pharmacy technicians are equipped to participate in specific components of comprehensive medication reviews (CMRs) and need to feel empowered to take on new responsibilities. Increased involvement from pharmacy technicians may be a viable strategy for developing and expanding clinical services, such as medication reconciliation and vaccine assessments with appropriate supervision. Shifting the responsibility of CMR tasks to technicians will enhance team based care within the community pharmacy setting. Objectives: The purpose of this project is to advance the role of certified pharmacy technicians (CPT) in a large community pharmacy chain. The primary objective is to determine the impact of a standardized advanced technician service training program on technician involvement in CMRs. The secondary objectives will evaluate the change in completion of CPT operational tasks approved by the Ohio State Board of Pharmacy, CMR quality, and pharmacist and technician satisfaction and confidence with technician participation in advanced pharmacy services.

Methods: This study will take place at five pharmacies within a large community pharmacy chain. Eligible study participants for CMRs will be identified through an existing medication therapy management program implemented at all pharmacies. CPTs will attend a two-part training series, consisting of an off-site informational session, followed by a one-on-one session at their site. When an eligible patient is identified and available to complete the CMR, pharmacy technicians will utilize an organization-specific CMR protocol to prepare and complete the medication history update and vaccination assessment for the patient. Technician involvement, the primary objective, will be measured by the number of medication history updates and vaccination assessments performed by technicians as part of a CMR documented in the electronic dispensing system. The secondary objectives, technician completion of operational tasks, will be determined by the number of voicemails, new non-controlled orders, and transfer prescriptions received by CPTs. Technicians will document the completion of these tasks daily. All data will be collated on a weekly basis. CMR quality will be evaluated by the number of vaccines administered as a result of technician driven vaccination assessment, and the percentage of completed CMRs with documented drug therapy problems (DTPs). The Research Electronic Data Capture (REDCap), a HIPAA-compliant, secure web application for building and managing online surveys, will be utilized to create pre-training and post-implementation surveys for pharmacists and technicians. Descriptive statistics will be used to analyze study objectives.

Results/Conclusions: Research in Progress.

285-Enhanced Medication Reconciliation to Improve Older Adults Medication Use during Care Transitions. Moczygemba L, Gums T, The University of Texas at Austin, Ching R, Tarrytown Pharmacy, Hudzik A, University of Texas, Akins R, Westminster. Email: Tyler.Gums@pfizer.com.

Objective: An independent pharmacy partnered with a senior living facility to implement enhanced medication reconciliation with a goal of improving care transitions in older adults. Objectives include: 1) Determine the impact of enhanced medication reconciliation on potential adverse drug events (ADEs) for high-risk drugs (i.e., anticoagulants, antidiabetic medications, and opioids) and drug-drug interactions (DDIs) and self-reported hospital and emergency department (ED) visits, and 2) Examine the implementation of enhanced medication reconciliation on process measures (number and type of medication discrepancies and encounter duration).

Methods: Enhanced medication reconciliation is comprised of a pharmacy technician phone call 24-48 hours after hospital discharge, a face-to-face pharmacist visit 7–14 days after discharge, and a technician phone call 21 days post-discharge. It included a comprehensive evaluation of medication regimens to examine ADEs for high-risk drugs and DDIs, create an up-to-date medication list, and provide medication-focused care coordination. All senior living facility residents were eligible to participate after a hospitalization. Number of prescription medications, medication discrepancies identified, encounters with high-risk drugs, and potential DDIs and DDI interaction level (severe, major, moderate, minor) were documented in an online portal during the pharmacist encounter. Self-report hospital and ED visits at 21-day follow-up and encounter duration were also collected. Descriptive statistics (mean, standard deviation, frequencies and percentages) were used for data analysis.

Results: From April 2018–July 2019, 26/70 (37.1%) eligible patients enrolled. Reasons for declination included 1) someone already reviews medications (nurse, caregiver) (n = 22), 2) not interested (n = 17), 3) no perceived need (n = 10), and 4) power of attorney declined (n = 4). Mean age was 89.2±3.9 years; all were white. All patients had the 24 – 48 hour technician call, 21 patients had 23 face-to-face pharmacist encounters, and 13 had the 21-day follow-up technician call. Patients were taking 7.6±4.0 prescription medications at each pharmacist encounter. Twenty-seven medication reconciliation discrepancies were identified; the most common

was adding medication to list (85.2%). Patients reported taking anticoagulants and antidiabetic medications at 39.1% and 17.4% of encounters; no patients were taking opioids. A total of 212 potential DDIs were identified as major (22.6%), moderate (58%), or minor (19.3%). No severe interactions were identified. Most (95.2%) discrepancies and issues related to high-risk drugs and potential DDIs were resolved in person by medication counseling, with a focus on informing patients about high-risk medication and DDI signs and symptoms that would indicate contacting a prescriber. Of those that had a 21-day technician call (n = 13), 1 patient reported a hospitalization and no ED visits were reported since the last hospitalization. Thirty percent of pharmacist encounters were 46-60 minutes, 21.7% were 31-45 minutes, and 43.4% were 30 minutes or less. All technician encounters were 1–15 minutes.

Conclusion: Older adults are taking high-risk medications and have potential DDIs that would benefit from medication reconciliation during care transitions. The impact on hospital and ED visits needs further study. Pharmacists should explore opportunities to work with community partners, such as senior living facilities, to advance their role in medication reconciliation.

287-Exploring the Relationship Between Number of Prescribed Medications and Post-Discharge Medication-Related Discrepancies and Adverse Effects in a Rural, Primary Care Setting. Raymond D, Mills E, Campbell University College of Pharmacy & Health Sciences. Email: mills@campbell.edu.

Objective: The objective of this study is to identify and prioritize patients for post-discharge medication reconciliation in a rural healthcare clinic setting by identifying a prescription number cutoff. Our clinic serves an average of 100 patients per day providing primary healthcare services for all ages. With the current volume, approximately 30 of our patients are hospitalized per week, consisting of nearly 1,560 care transitions per year. Post-discharge medication reconciliation aids in identifying patients with recently modified medication regimens and provides a medication management service to recently hospitalized patients. As our need for these services increases, our clinic is in need of streamlining its post-discharge medication reconciliation protocol in order to provide timely services. Data is lacking in identifying a clinically significant number of prescribed medications at which a post-discharge medication reconciliation becomes higher priority. By exploring the medication errors associated at various levels of prescription numbers, we can identify a valid cutoff to mandate post-discharge medication reconciliation in our physician office practice. As optimal approaches to avoiding medication errors are still not clear, an answer to this question in our outpatient population could streamline the transition of care services provided in our facility as we could identify those who are at higher risk and thereby classify them as higher priority.

Methods: Included patients in this prospective, observational, single-center study are patients of our clinic that are age ≥ 18 years old that have been discharged from hospital to home within 14 days and have had their medication list previously reviewed by our medical staff within the past 6 months of the evaluation period. Patients will be selected by electronic health record (EHR) communication and will be used to collect preliminary data regarding age, date of discharge, medication list review history, number of prescriptions, and prescription classes. The existing post-discharge medication reconciliation protocol for our clinic will be utilized as a standardized data collection tool and will be used to record study data regarding number of medication-related discrepancies and/or adverse events and medication class which it is associated. Data analyses will explore the rate of medication-related discrepancies and adverse events within pre-specified groups, established by number of prescriptions per patient, following a one-month post-discharge medication reconciliation evaluation. A chi-square test of association will be conducted to compare the proportions of patients with at least 1 medication-related discrepancy between the numerical categories of prescribed medications and will be repeated for medication-related adverse events. Mean number of medication-related discrepancies and adverse events and other secondary endpoints will be analyzed utilizing a student t-test and descriptive data.

Results/Conclusions: Research is ongoing.

Mental Health

288-Teaching Suicide Prevention Communication Skills: Adaptation of a Gatekeeper Training Program for Community Pharmacy Staff. Carpenter D, Hubal R, UNC Eshelman School of Pharmacy, Lavigne J, US Department of Veterans Affairs, Center of Excellence for Suicide Prevention, Roberts C, University of North Carolina at Chapel Hill. Email: jill.lavigne@va.gov.

Objective: Our objective was to determine how to adapt a suicide prevention training program developed by the Veterans Administration (VA) to address communication-related issues that are relevant for community pharmacy staff. Suicide is the tenth leading cause of death in the United States. A recent survey found that more than 21% of community pharmacy staff had a patient request a lethal dose of medication and more than 12% had a patient directly state intention to kill themselves. Existing suicide prevention training programs for pharmacists provide minimal content about how to communicate in these situations.

Methods. A convenience sample of community pharmacy staff were recruited via the North Carolina Board of Pharmacy to review and provide feedback on the VA's SAVE gatekeeper training program (SAVE). SAVE is a 20-minute video that covers suicide myths and the four components of the SAVE acronym (S= suicide warning signs; A=ask about intent to die by suicide; V= validate the individual's feelings, and E= encourage/expedite a referral). Pharmacy staff were eligible if: they were either a pharmacist or pharmacy technician, at least 18 years of age, read and spoke English, and worked in a community pharmacy setting. After providing consent, participants completed a 1-hour semi-structured interview. During the interview, participants watched various segments of the SAVE video and provided feedback on how the video could be adapted to apply to the community pharmacy setting. All interviews were digitally recorded, transcribed, and analyzed by two independent coders using MAXQDA. Coders reached consensus on the themes present in

each transcript.

Results. Nine pharmacists and eight pharmacy technicians participated. Twenty-two themes emerged during the coding process, including themes related to barriers to communicating about suicide in a community pharmacy, informational preferences, visual preferences, and relevant role plays that should be portrayed. Barriers included not having enough time or a private location in which to have a conversation with an at-risk patient. Most participants also indicated that they would not be comfortable asking a patient if they were thinking about killing themselves (which is considered a best practice). Instead, they wanted to ask if patients were thinking about harming or hurting themselves. Participants thought the video should be limited to less than 30 minutes and include 2-3 role play scenarios, including how to handle interactions that take place over the phone and in the drive-thru. Participants preferred real versus animated characters and wanted the key aspects of SAVE to be highlighted with visual text during the scenario. Pharmacy staff desired additional resources, including a SAVE cheat sheet and resource lists (including hotlines and local organizations) that can be given to patients.

Implications/conclusions. Pharmacy staff provided important feedback about how to create communication-focused content for an online suicide prevention training program for community pharmacy staff. We plan to use these formative data to adapt the SAVE program and pilot test its effectiveness with community pharmacy staff.

289-A Simple Phone Call: Community Pharmacist Led Intervention at a Large Community Pharmacy Chain to Promote Antidepressant Adherence. Do A, Smith's Food and Drug. Email: andreado1211@gmail.com.

Objective: While depression is extremely responsive to antidepressant therapy, benefits can only be seen when patients are adherent to the medication. Patients who are non-adherent during the first six weeks of treatment are at an even increased risk of poor outcomes. This study aims to establish the importance of a community pharmacist as part of the mental health care team by determining if follow-up by a community pharmacist after pick-up of a new antidepressant medication has an impact on medication adherence. The second objective is to examine the quality of counseling patients receive at their community pharmacy. The third objective is to determine the feasibility of this service being offered in a large chain community pharmacy by identifying barriers to implementation and patient participation.

Methods: Study subjects will be patients 18 years or older identified as receiving a truly new antidepressant medication, defined as a medication that the patient has not taken within the past year. Medications included are selective serotonin reuptake inhibitors (SSRIs), serotonin norepinephrine reuptake inhibitors (SNRIs), tricyclic antidepressants (TCAs) and bupropion. At point of sale in six pharmacies in one regional division of a large community pharmacy chain, a patient note will be entered into the pharmacy computer system denoting a truly new medication and its indication. A report will then be generated that identifies new prescription numbers that have been sold. The research team will assess each patient's profile for the patient note entered at the pharmacy. If note does not exist, eligibility will be determined based on the medication profile. If a truly new medication is identified, an intervention will be entered into the pharmacy computer system to prompt the pharmacist to call the patient at days 7, 25 and 55 after the medication is picked up. The phone call will assess adherence, side effects, continuation of therapy, and quality of counseling. The phone calls will also provide the patients with medication education, with a focus on unwanted side effects in the first 2 weeks of treatment and that it can take up to 8 weeks for patients to experience the full benefit of the medication. Control arm patients will be selected from control pharmacies. They will have no contact from a pharmacist after pick-up of their medication. At day 70 after pick-up, fill history and medication possession ratio will determine adherence. In order to standardize the pharmacist intervention, all participating pharmacists will receive training in the form of a webinar delivered by the primary investigator.

Preliminary/Final Results: After completion of this study, it is expected that the patients enrolled in the pharmacist intervention group will have greater adherence at the 70-day mark and will continue to take the medication beyond the 70-day mark as compared to the control group. It is also expected that after this study patients will have a greater understanding and appreciation of the pharmacist's role on their mental health care team.

Conclusions/Implications It is anticipated that pharmacist follow-up after initiating antidepressant therapy will have a positive impact on adherence.

290-Ability of the Well-Being Index to Identify Pharmacy Residents in Distress. Jaramillo S, Horst S, Lesser C, Hamper J, Safeway/Albertsons. Email: sjaram@midwesern.edu.

Objective: Ability of the Well-Being Index to Identify Pharmacy Residents in Distress.

Background/Objectives: Burnout and increased suicide rates have been well documented in healthcare provider professions including medical students, residents, physicians, nurses, and pharmacists. Just as pharmacists are experiencing burnout, pharmacy residents may also be prone to experiencing burnout due to the rigorous curriculum requirements and workload that is required throughout a pharmacy residency. The first step to identifying burnout in one's self is to recognize levels of distress. A variety of brief assessment tools have been developed for healthcare professionals, including pharmacists, to assess their levels of distress and track over time. The Mayo Clinic has developed the Well-Being Index (WBI), a brief 9-item assessment tool that has been validated for various healthcare professionals (medical students, residents, physicians, nurse practitioners, physician assistants, and US workers). Recently

the WBI was adapted for the pharmacy profession. The index provides scores for the following six categories: quality of life, meaning in work, work-life integration, likelihood of burnout, severe fatigue, and suicidal ideation, and provides a well-being index score (7 categories – extremely low – excellent) and where the respondents well-being index score is compared to US working adults. Studies have shown that the WBI is a useful and valid tool to identify distress within the target populations. The objective of this study is to evaluate the nine-item WBI to identify: distress, likelihood of burnout, and quality of life of pharmacy residents.

Methods: A cross-sectional survey of pharmacy residents will be conducted between November 2019 – March 2020. Each Residency Program Director (RPD) listed in the American Society of Health-System Pharmacists (ASHP) directory will be contacted (n = 2300) and asked to forward the email with the survey link to their pharmacy residents (PGY1 & PGY2). The email will contain a description of the research project and two links: 1) to the WBI and 2) to the research survey. Respondents will be asked to complete the WBI first and then enter their WBI results into the research survey and respond to additional questions – demographics, including age, gender, type of residency, year of residency, etc. as an incentive to complete the survey, five $100 Visa gift cards will be raffled off to those who participate.

Results: Institutional Review Board approval anticipated in November 2019. Conclusions: Research in progress. The study hopes to identify current pharmacy residents' level of distress, likelihood of burnout and quality of life. The index will also identify and provide resources tailored to an individual based on their results. Feedback from the Well Being Index should engage pharmacy residents in a higher level of self-awareness as well as provide feedback in hopes of decreasing and preventing burnout in this field of healthcare.

291-Use of the NIATx Implementation Strategy to Increase Access to Medications for Individuals with Co-Occurring Mental Health and Substance Use Disorders. Kaur A, Rao D, Gilson A, Ford II J, University of Wisconsin-Madison School of Pharmacy. Email: akaur7@wisc.edu.

Objective: The objective of this study was to evaluate the effectiveness of a proven implementation strategy (NIATx) to increase the proportion of individuals with co-occurring disorders receiving both substance use and mental health medications. The disease burden and alcohol and illicit and prescription drug problems, as well as mental health disorders, is substantial. Despite increased awareness, access to integrated services for persons with co-occurring substance use and mental health disorders is a long-standing behavioral health problem and access to evidence-based treatments (medications and psychosocial interventions) is suboptimal. Implementation science has emerged with potential solutions to this issue.

Methods: In a cluster-randomized wait-list control group design, programs (n=49) within community addiction treatment agencies across the State of Washington were randomized at baseline to cohort1 (intervention) or cohort2 (waitlist). Each program had three Dual Diagnosis Capability in Addiction Treatment (DDCAT) Index assessments. All program patient admissions 45 days prior to and after each DDCAT assessment date were identified in the Behavioral Health Data System. For each admission, de-identified service and medication encounters (substance use and mental health) 90-days post admission and patient demographics were extracted from the system. Dependent variables were percent of patients involved in only substance use medication encounters (SUMEs), only mental health medication encounters (MHMEs), and those involved in both encounters (SUMHMEs). The fixed factors were intervention (NIATx vs. Waitlist) and period (at Baseline, Year1, & Year2). A univariate general linear model analyses was performed of all dependent variables using SPSS v 25.

Results: The total three-year sample size was 11,971 admissions. Despite a naturalistic change in cohort2 from baseline to year1, the percent of patients involved in SUMEs in Cohort1 versus Cohort2 programs was significant (□=0.023, p=0.034) at the end of Year1. Overall, NIATx implementation strategies significantly increased the percent of patients engaged in SUMEs in cohort1 (□=0.031, p=0.005) and cohort2 (□=0.098, p < 0.0001) during the respective intervention periods. Patients involved in MHMEs during the intervention period did not change significantly. However, NIATx implementation strategy showed a lagged improvement in patients engaged in MHMEs from year1 to year2 in cohort1 (□=0.055, p=0.001). Being involved in SUMHMEs increased significantly during the intervention period for cohort2 (□=0.061, p<0.0001) but showed a lagged improvement in cohort1 (□=0.044, p<0.0001)

Implications: NIATx implementation strategies were found to effectively increase access to substance use and mental health medications. Access to both medications, especially in cohort2, is driven primarily by access to SUD medications and highlights challenges associated with integrating co-occurring treatment into programs with a primary mission to serve clients with a substance use disorder. However, the lagged increase in access to mental health medications in cohort1 suggests that the NIATx implementation strategies can be utilized by substance use disorder programs to implement programmatic changes to better serve the co-occurring needs of their clients. Additional research is needed to determine if the rates of patients receiving SUD and MH medications continue to increase, and to understand how organizational-level or patient-level characteristics are influencing these changes.

292-Describing characteristics of patients utilizing grocery store community-based pharmacists for medication administration of long-acting injectables for behavioral health and recovery. Lammers E, Clough C, Cross C, Highland J, Albertsons Companies. Email: emily.lammers@albertsons.com.

Objective: The primary objective of this study is to describe characteristics of patients who currently utilize medication administration of long-acting injectables from a grocery store community-based pharmacist. The secondary objectives of this study are to describe characteristics of community pharmacies that have a high volume of medication administration versus community pharmacies that have a low volume of medication administration in states where legal and to identify characteristics of prescribers who are utilizing

community pharmacists to provide medication administration to their patients. Patients diagnosed with schizophrenia and other related psychotic disorders are statistically more non-adherent to their medications. Long-acting antipsychotic injections (LAIAs) can increase adherence, reduce hospitalizations, and help patients have better management of their disease and symptoms. LAIAs provide many advantages, but access to care and cost for these medications present a barrier. Many patients and providers are not aware these medications and medication administration services are available at community-based pharmacies and by community-based pharmacists. This study will aim to identify characteristics of patients that already utilize medication administration services from a grocery-store community-based pharmacist and to identify where there may be gaps in care and patient populations not being reached by this community-based service.

Methods: This study will be a retrospective chart review and will be submitted to the International Review Board for approval. Patient charts will be reviewed from a 3-month period from December 1st, 2018 through February 28th, 2019. Data will be provided from community pharmacies for the nine states that currently provide medication administration services. Patient data will be de-identified using unique patient identifiers. Inclusion criteria for the study will include patients who received a LAIA or naltrexone during December 1st and February 28th, 2019 and are greater than 18 years of age. Patients younger than 18 years of age will be excluded from the study. Data will be analyzed to identify and compare commonalities and differences between patient characteristics. Specific patient categories analyzed will be: type of insurance and percent of prescription coverage, providers prescribing LAIAs or naltrexone injections to community pharmacies to be administered, demographic information, age, gender, proportion of days covered (PDC) scores over three months, new diagnosis and if there was any change in therapy.

Results: Research currently in progress.

Implications and Conclusion: The results of this study will allow healthcare providers to have a better understanding of the patients already benefitting from this service and where a gap in knowledge for these services may be. Identifying the gap will allow pharmacists to identify patients who may have not had access to care to seek care in a grocery-store community pharmacy for management of their disease.

293-Impact of High Cost-Sharing on Individuals with Bipolar Disorder in Commercial Plans and Implications for Pharmacy. Madden J, Northeastern University School of Pharmacy, Foxworth P, Depression and Bipolar Support Alliance, Busch A, Harvard Medical School and McLean Hospital, Zhang F, Ross-Degnan D, Araujo-Lane C, LeCates R, Soumerai S, Wallace J, Wharam J, Lu C, Harvard Medical School and Harvard Pilgrim Health Care Institute. Email: j.madden@northeastern.edu.

Objective: High-deductible health plans (HDHPs) require substantial patient cost-sharing and are becoming the predominant form of US private insurance. Bipolar disorder is a serious mental illness affecting 2-4% of Americans, with major risks of disability and mortality. Pharmacotherapy coupled with psychotherapy has been identified as best treatment practice. We found no prior studies of the impact of high deductibles on people with mental illness or studies of how people navigate coverage and treatment of mental illness. Our mixed-method project included a quasi-experimental examination of claims data, estimating impacts on people with bipolar disorder after employers switched them from traditional insurance into an HDHP. In-depth interviews explored the experience of similar individuals' cost-coping in employer plans.

Methods: Our quantitative data came from a large US insurer on 2,862 HDHP members with bipolar disorder age 12-64 who contributed 2-year observation periods between 2003 and 2012. HDHP members were enrolled 1 year in a low-deductible (≤$500) plan then 1 year in an HDHP (≥$1000) after an employer-mandated switch. Employers of 1:3-matched contemporaneous controls (n=7,705) offered only low-deductible plans in both years. Outcomes included psychiatrist and non-psychiatrist mental health provider visits, days covered by medications recommended in bipolar treatment, and out-of-pocket (OOP) costs for visits and prescription fills. We modeled pre vs post changes for HDHP versus control patients using interrupted-time-series and difference-in-difference approaches. We conducted 1-hour telephone interviews with 28 individuals with bipolar disorder and employer-sponsored insurance and 12 family caregivers. Individuals were diverse in age (18-64), US region, plan generosity, and comorbidity burden. Study partners at the Depression and Bipolar Support Alliance (DBSA), a national advocacy organization, recruited through local chapters. Interview domains included paying for care, understanding coverage, and making choices. We analyzed themes in coded transcripts using NVivo and Excel.

Final Results: In the quantitative study, plan members who were switched into HDHPs faced higher average costs per visit (+17.8% and +33.8%, respectively) and 30-day fill equivalent (+16.8%), compared to controls. We detected no change in psychiatrist visits or bipolar medication use among HDHP members relative to controls, though total annual OOP costs increased substantially. HDHP members reduced their non-psychiatrist mental health visits by 10.9%, maintaining stable annual costs for this service. Qualitative interviews yielded concordant results. Respondents varied in their perceived current need for psychotherapy; therapy users (roughly 2/3 of reports) valued the insights they gained through therapy into illness characteristics and management of stress and mood cycles. However, respondents consistently identified access to a psychiatrist prescriber and psychiatric medications as top priorities enabling daily functioning. They more often reported cutting back in a range of other areas of life, including psychotherapy, in order to afford and continue psychiatrist care and medication.

Conclusions/Implications: High cost sharing can lead to difficult choices and potentially harmful cuts in recommended care. Individuals' decisions reflected their relative priorities among services. Qualitative inquiry was essential for understanding personal

considerations behind peoples' trade-offs and life consequences not observable in claims data. More nuanced insurance plans could protect vulnerable patients from losing access to needed services.

294-Assessment of Mental Health First Aid Interventions in an Underserved Community Pharmacy. McDuffie A, The Ohio State University College of Pharmacy, Seifert J, Jones S, The Charitable Pharmacy of Central Ohio. Email: mcduffie.18@osu.edu.

Objective: The primary objectives of this study will be to characterize commonly encouraged and utilized Mental Health First Aid (MHFA) interventions and identify patient barriers to accessing mental health care services. MHFA training is a course that educates individuals on the skills needed to identify, understand, and respond to signs of mental health illnesses and substance use disorders. Studies done about MHFA have concluded that the training was seen to be effective in decreasing the stigma around mental health and found that those who participated in the training left with an increased awareness of mental illness and more confidence in dealing with individuals with mental health conditions. Currently, over 40% of patients at the study site take at least one medication for a mental health condition. In efforts to strengthen our current medication therapy management practice, our pharmacy has provided MHFA training and certification for pharmacy staff, resident pharmacists, and Advanced Pharmacy Practice Experience (APPE) students. This study will survey patients who have been counseled by a MHFA trained pharmacist or pharmacy student, and will evaluate the counseling suggestions made during the one-on-one intervention.

Methods: The study site is a non-profit charitable pharmacy whose primary mission is to provide affordable and appropriate pharmacy services and to coordinate access to healthcare for people who are vulnerable in the community. The pharmacy provides medications and pharmacy services at no-charge, including disease state education, medication counseling, medication therapy management, point of care testing, and social program assistance. Each time patients come in for new or refill prescription medications, they have a private consultation with a pharmacist or pharmacy student. These encounters and any interventions made during the encounter are documented in the electronic health record (EHR), and all diagnoses listed in the EHR are self-reported by the patient. Patients who have had an intervention with a MHFA trained pharmacist or pharmacy student will be identified using the EHR. When these patients return to the pharmacy for a new or refill prescription, they will be asked to complete a survey. Survey questions will be analyzed with the use of descriptive statistics to assess patient recall of the intervention, usefulness of the resources provided, and identification of any barriers the patient may be facing with regards to accessing mental health care.

Results: Research in progress.

Conclusions: This project intends to contribute to the literature by identifying and confirming any barriers underserved patient populations may face when it comes to accessing mental health care. The information from this study may also be used to encourage community-based pharmacy practitioners to complete Mental Health First Aid training and utilize the training and interventions to impact the care of patients with mental health conditions.

295-Implementation of Suicide Prevention Training for Student Pharmacists. McKeirnan K, Willson M, Robinson J, Buchman C, Akers J, Washington State University College of Pharmacy and Pharmaceutical Sciences. Email: kimberly.mckeirnan@wsu.edu.

Objective: Suicide claims the life of one person every 12 minutes and is the second leading cause of death for individuals aged 15-34 years old. A recent survey of over 67,000 undergraduates from 108 universities indicated that 24% of college students reported suicidal ideation and 9% attempted suicide, illustrating the need for increased suicide awareness on college campuses. Additionally, pharmacists have an important role in suicide prevention because pharmacists are very accessible and have frequent contact with patients. Pharmacists and future pharmacists have a responsibility to the community to help reduce suicide rates by recognizing the signs and having the skills needed to take action when concerns of suicide are suspected.

Methods: In 2017, Washington became the first state to require pharmacists complete a suicide and prevention training. Faculty at the Washington State University College of Pharmacy and Pharmaceutical Sciences implemented a required suicide prevention and awareness training program to enable our student pharmacists to learn the knowledge needed to recognize individuals at risk of suicide and the skills to take action. In three-and-a-half hours, student pharmacists were trained to identify persons at risk of suicide, empathize, ask directly about suicide, remove danger, and refer individuals for help utilizing the LEARN framework for suicide prevention. A pre-survey was distributed prior to training, and a post-survey was sent after the training. Questions were designed to assess comfort and confidence assessing and intervening with individuals at risk of suicide.

Results: One-hundred seventy-one students participated in the training. One-hundred fifty-eight students (92%) completed both the pre-and post-training surveys. Forty-six percent of students (74/158) reported having previous personal experience with suicide. Thirty-six percent of students (57/158) reported they know someone who may need help and intend to reach out to them after completing this training. Eighteen percent of students (30/158) said "yes" to the statement, "From what I just learned, I have decided to seek help for myself." Additionally, when asked "how are you going to incorporate suicide discussions into your future practice" students shared the following responses: • "I am going to incorporate suicide discussion anytime I counsel a patient about a medication that may have suicide as a side effect, or anytime I may notice the signs of it on a patient. I feel much more comfortable about it." • "Through patient counseling I will always incorporate suicide discussion to my patient to let them know I care about them."

Conclusion: A three-hour training program increased student pharmacist confidence regarding assessing and intervening with

individuals considering suicide. After the training, several student pharmacists recognized they either knew someone or that they themselves may need to seek help related to suicidal ideation. Encouraging pharmacists and future pharmacists nation-wide to participate in suicide prevention training may aid future pharmacists in preventing death by suicide.

296-Pharmacist impact on medication adherence in psychiatric patients managed via telemedicine. McMinn K, Smith E, Pearson M, Mississippi Department of Health Pharmacy, Woods J, University of Mississippi Medical Center, Center for Telehealth. Email: karmenlee11@gmail.com.

Objective: Nonadherence has been established as a major barrier for various mental health disorders. This can contribute to worse outcomes and can negatively affect a patient's overall quality of life. The objective of this study is to determine the extent to which follow up with a pharmacist improves adherence in new psychiatric patients enrolled in an existing psychiatric telemedicine program.

Methods: This study will be submitted to the Institutional Review Board for approval. The electronic medical record system will be used to identify new patients enrolled in the psychiatric telemedicine program. After the initial telemedicine visit with a nurse practitioner, a pharmacist will contact the new patient within 5 to 7 business days via telephone to assess adherence and other medication therapy issues using a medication review. Adherence will be verified with patients' pharmacy records. All patient interactions will be documented in the patients' charts which will be routed to the appropriate nurse practitioner if barriers or side effects are discovered. A proportion of days covered percentage will calculated and verified with pharmacy records each month. Follow up phone calls will be scheduled with patient request, with nurse practitioner request, or with a decrease in proportion of days covered percentage. The following data will be collected: patient name, date of birth, gender, ethnicity, zip code, medical history, current medication, and pharmacy fill history of newly prescribed medications. To protect confidentiality, all information will be stored on an approved password protected database that only study personnel will have access to.

Preliminary/Final Results: N/A.

Conclusions/Implications: N/A.

297-Patient and Prescriber Perceptions of Community Pharmacists' Role in Depression Screening. Mospan C, Wilson J, Wingate University School of Pharmacy, Gillette C, Wake Forest University School of Medicine, Department of PA Studies. Email: c.mospan@wingate.edu.

Objective: The United States Preventative Services Task Force (USPSTF) recommends depression screening for adults; yet only 2.25-5% of adults are screened each year. Patients see their pharmacist 1.5 to 10 times more than they see their primary care provider each year. Community pharmacists can be leveraged to increase depression screening rates and referrals to primary care. The objective of this study was to determine patient and prescriber perceptions of pharmacist-provided depression screenings in the community pharmacy setting and to assess best strategies for patient engagement and care coordination.

Methods: Qualitative semi-structured key informant interviews were conducted with adult patients of an independent pharmacy and high-frequency prescribers of selective serotonin reuptake inhibitor (SSRI) and serotonin norepinephrine (SNRI) antidepressants. The Consolidated Framework for Implementation Research (CFIR) interview tool was utilized to design interview questions. Interviews were recorded and transcribed. Deductive and inductive coding methods were utilized to code the transcripts. Transcripts were analyzed using NVivo12 qualitative data management software. Coded text was grouped into similar categories to identify major themes.

Results: Twelve patients and four prescribers were successfully recruited to participate in the study. Saturation was met for patient interviews, but not prescriber interviews. Patient perceptions were categorized into three key themes: (1) private and confidential screenings offered outside of workflow; (2) disparate views about the role of the community pharmacist exist; (3) mental health stigma concerns were prevalent. Prescriber perceptions were categorized into three key themes: (1) support community-pharmacist provided depression screenings; (2) necessity of referral algorithms for transitions of care; (3) communicate full screening results for positive and negative screens. An additional, shared theme was identified among patients and prescribers: (1) view of the pharmacist's role in mental health care was influenced by an established relationship with a community pharmacist. Among patients interviewed, only 25% recalled being screened for depression by a health care provider.

Conclusions: Patients and prescribers provided differing views of the role of the community pharmacist in depression screening, with more trepidation among patients. For increased patient acceptability, ensuring a private environment in the community pharmacy outside of traditional workflow is essential. While supportive of pharmacists' role, prescribers stressed the importance of developing a robust algorithm for referral of patients to appropriate community resources based on acuity of symptoms identified in the screening. The low prevalence of depression screening amongst participants highlights the opportunity for community pharmacists to bridge the gap in potentially identifying patients flying under the radar.

298-Examining the Medicare Part D Medication Therapy Management Program in the Context of Mental Health. Murugappan M, Seifert R, Farley J, University of Minnesota College of Pharmacy. Email: murug005@umn.edu.

Objective: Patients with mental health conditions are more medically complex with a greater number of chronic comorbid conditions, medications, and medication therapy problems. Therefore, they especially stand to benefit from Medication Therapy Management

(MTM) services. Despite inclusion of mental health conditions in the Center for Medicare and Medicaid Services' (CMS) eligibility criteria for MTM services, no past studies have assessed the accessibility and utilization of the Medicare Part D MTM program among patients with mental health diagnoses. Objectives: This study aims to describe and compare the delivery of medication therapy management (MTM) services among Medicare beneficiaries with and without mental health conditions. Rationale: Understanding the Medicare Part D MTM program's successes and gaps in reaching patients with mental health diagnoses can help pharmacists better serve this unique patient population and address their unmet medication-related needs.

Methods: Using a cross-sectional study design, we merged a 20% random sample of 2014 Medicare Parts A, B, and D data with the newly released 100% sample of MTM data to examine MTM enrollment and receipt of comprehensive medication reviews (CMR) between patients with and without mental health conditions. CMR use and MTM delivery were examined among a subset of 825,003 MTM-enrolled beneficiaries. Predisposing, enabling, and need characteristics were selected based on the Andersen Behavioral Model of Health Services Use. Descriptive, bivariable, and multivariable logistic regression statistics were used to determine associations between beneficiary characteristics and MTM delivery.

Results: 3,016,620 (43%) and 3,997,105 (57%) beneficiaries were categorized into mental health and non-mental health cohorts, respectively. MTM enrolment in the mental health cohort was significantly higher than the non-mental health cohort (17.4% vs. 7.5%, $p<0.001$). However, once enrolled, a greater proportion of the non-mental health cohort received a CMR (19.3% vs. 17.7%, $p<0.001$). Patients in the mental health cohort were more likely to have a hospitalization (22% vs. 9.2%, $p<0.001$) or ED visit (25.2% vs. 11.5%, $p<0.001$), and used more therapeutic medication categories during the year (16 vs. 12, $p<0.001$). A greater proportion of patients in the mental health cohort receiving a CMR in 2014 had at least one a MTP identified and resolved compared to CMR recipients without a mental health condition (24.8% vs. 20.6%, $p<0.001$).

Conclusion: Although patients with mental health conditions are more often enrolled into the MTM program, they are less likely to receive a CMR once enrolled. Given that this population has higher medical complexity and a higher MTP burden following a CMR, opportunities exist for pharmacists to enhance the delivery of MTM in this population.

299-Evaluating the Impact of Mental Health Check-In Services by Community-Based Pharmacists on Medication Adherence in Patients with Depression. Oduro A, The Ohio State University and The Kroger Company, Mehta B, The Ohio State University, Blank E, Effinger S, The Kroger Co.. Email: oduro.8@osu.edu.

Objective: Community pharmacy practice has shifted from a focus on volume of services provided to providing quality clinical services to patients. Neuropsychiatric disorders are at an all-time high and community pharmacists are uncomfortable with addressing these conditions. Barriers to mental health services by community pharmacists include a lack of knowledge and confidence in how best to treat patients. The purpose of this study is to develop a pilot community pharmacy-based mental health check-in service and evaluate its impact on medication adherence in patients with depression.

Methods: There are two phases in this study. In Phase 1, targeted Pharmacists in Charge (PICs) from a grocery-store chain will complete an online needs assessment to identify gaps in knowledge and confidence in providing mental health services. The PICs will represent pharmacies with the highest rate of prescription fills for specific antidepressants. The needs assessment will include the Adapted Depression Attitude Questionnaire; a 24-item validated tool developed to measure pharmacists' attitudes towards depression and demographics. PICs will have a month to complete the assessment with weekly email reminders. Results will be used to develop a training video to address gaps in knowledge and confidence. Participating PICs will have a month to watch the training video and complete a post-training assessment. Phase 2 involves the implementation of a new pilot mental health check-in service for patients with a self-reported diagnosis of depression. Select PICs from Phase 1 will be trained to provide this service. Eligible patients will be offered the opportunity to participate through face-to-face encounters or phone calls inviting them to participate. Components of the mental health check-in service include a Patient Health Questionnaire (PHQ)-2, a medication management service and a social support service. Participants will complete a PHQ-2 at their initial encounter. Study participants with a positive PHQ-2 will be given a PHQ-9 for further assessment of mental health. The medication management and social support service requires the PIC to provide in-depth medication-related education and counseling and referrals to additional resources as necessary. A monthly patient follow-up will be completed for six months to assess medication adherence using a validated adherence tool. The PIC will address medication related concerns, administer a PHQ-2 and monitor for crisis experienced by study participants.

Results: This study is in progress. Results to be collected include changes in the pharmacist's knowledge and confidence in providing mental health services and medication adherence of patients enrolled in the service. Other outcomes are number of pharmacist interventions, the number of pharmacist referrals for additional resources, and reasons for non-adherence.

Conclusion: This study will demonstrate the overall impact of a pharmacist-led mental health check-in service on medication adherence among patients with depression. Results from Phase 1 of this study can support the development of appropriate training for pharmacists in providing care to patients with mental health conditions.

300-Pharmacist Use of the Jung/Myers Model of Personality Types to Improve Screening, Engagement, and Support for Individuals Experiencing or Prone to Anxiety and Depression but are Undiagnosed. Olson A, Schommer J, University of Minnesota, Rickles N, University of Connecticut, Brown L, Chapman University, Tieger P, Speed Reading People, LLC. Email: olso2001@umn.edu.

Objective: The percentage of U.S. adults diagnosed with anxiety and depression in any given year is 20% and 7%, respectively, but estimates project the true prevalence is 200-300% greater than these diagnosed cases. Along with factors like genes, neurotransmitter balance, and life events, research suggests that personality is a key component of anxiety and depression development, one's readiness to engage with a provider about an illness, and adopting positive management behaviors. Among the most used personality models in the U.S. is the Jung/Myers Model of Personality, which conceptualizes personality as 16 different types distinguished by four sets of dichotomous traits: Extravert/Introvert (E/I), Sensing/Intuitive (S/N), Thinking/Feeling (T/F), and Judging/Perceiving (J/P). Pharmacists are among the most accessible members of the healthcare team and well-positioned to use personality-based point of care assessments to improve screening, engagement, and initiation of care for undiagnosed patients experiencing or prone to depression and anxiety. Objective: This study's objective is to determine the association strength for personality type with depression and anxiety using the Preferred Communication Style Questionnaire (PCSQ©) and the Four-Item Patient Health Questionnaire for Depression and Anxiety (PHQ-4). The rationale is to explore a novel and promising evidence-based approach for recognizing, engaging, and supporting millions of Americans experiencing or prone to depression and anxiety that is more useful than the PHQ-4 alone.

Methods: This study used a quantitative, cross-sectional survey design. Data were collected from a self-administered, online questionnaire taken by a panel of 10,500 U.S. adults matched to Census statistics for age and geography between March 14-30, 2016. Chi-square analysis was used to compare personality types with depression and anxiety. Practical significance was determined by a "percentage-from-expected" score computed as the group of interest proportion divided by its proportional representation in the overall panel.

Final Results: The percentage of panelists reporting past or current clinical depression was 26.9%, compared to 17.2% who gave PHQ-4 responses consistent with a depression diagnosis. The percentage of panelists reporting past or current general anxiety was 25.6%, compared to 18.9% who gave PHQ-4 responses consistent with a general anxiety diagnosis. Chi-square findings were significant for all 16 personality types with depression and anxiety ($p<0.001$) and detected substantial differences in "percentages-from-expected" prevalence for several trait combinations. For example, panelists with Intuitive-Feeling trait combinations showed a higher than expected prevalence of anxiety (+29% PHQ-4; +24% past/current) and depression (+22% PHQ-4; +23% past/current), while panelists with Sensing-Judging trait combinations showed a lower than expected prevalence of anxiety (-13% PHQ-4; -12% past/current) and depression (-15% PHQ-4; -11% past/current).

Conclusions/Implications: Personality type is strongly associated with depression and anxiety using the PHQ-4 and PCSQ. Both tools are quick and easy to complete, and conducive to pharmacist use for health screenings, optimizing communication strategies for patient engagement, and supporting patients in receiving needed care. Additional benefits may include a stronger patient-pharmacist relationship, improved treatment adherence for all health conditions, and cost savings for patients and society. Future research should replicate findings within pharmacy settings and test relationships between personality type, readiness to engage, behaviors, and outcomes.

301-Developing and Evaluating Simulated Patient Scenarios in Order to Teach Suicide Prevention Communication Skills to Student Pharmacists. Pothireddy N, UNC-RASP, Lavigne J, St. John Fisher College, Carpenter D, UNC RASP. Email: nithya_pothireddy@unc.edu.

Objective: Suicide is currently the tenth leading cause of death in the U.S. and its frequency has increased 33% between 1999 and 2017. Currently, methods used to teach suicide prevention skills to healthcare students include inter-professional classes with simulated patients, online modules with interactive scenarios, and in-person classes with role-plays or virtual patients. Our objective is to develop and evaluate whether a video-based patient role play scenario in which a pharmacist encounters a suicidal patient increases student pharmacists' knowledge and confidence to interact with suicidal patients.. To our knowledge, would be the first study to evaluate the impact of a video-based suicide-focused patient role play scenario on student pharmacists Due to the lack of published suicide prevention training studies for student pharmacists, there is great potential to develop and test suicide prevention training materials focused on this population. In particular, simulated patient scenarios may be an effective method to teach student pharmacists how to react to patients who exhibit suicide-warning signs, as well as improve students' knowledge and self-efficacy to communicate about suicide.

Methods: Approximately 190 student pharmacists will be participating at two pharmacy schools; one in North Carolina and one in New York. The suicide prevention education module includes: 1) a 15-minute PowerPoint presentation that covers basic suicide statistics, warning signs, and how to communicate with and appropriately refer a suicidal patient; 2) a video-based role play scenario in which a pharmacist encounters a young woman with depression who expresses hopelessness and risk for overdose; and 3) a group-based role play activity in which students practice responding to the woman in the scenario. The total time to implement the educational module takes approximately 30 minutes. All students will complete a survey before the module (pre-test) and after the module (post-test) to test confidence and knowledge. Surveys will be anonymous and will also include open-ended questions that evaluate opinions of students regarding format and effectiveness of the module.

Preliminary Results: Data are currently being collected for the study. Data collection is complete for North Carolina, where

approximately 130 student pharmacists completed the pre and post-test surveys. Data will be collected for approximately 70 students in New York in December. All data will be analyzed in SPSS and t-tests and chi-square tests will be used, as appropriate, to evaluate the impact of the module on student knowledge and confidence. Open-ended response data will be analyzed thematically by two independent coders to identify the module's strengths and areas for improvement.

Implications/Conclusions: The results from this study will allow us to examine whether a brief video-based role play module improves knowledge and confidence for student pharmacists. If so, the video role play module can be easily disseminated to other pharmacy.

302-Effectiveness of the NIATx Implementation Strategy to Reduce Wait-Times to Medications for Individuals with Co-Occurring Mental Health and Substance Use Disorders. Rao D, Kaur A, Gilson A, Ford II J, University of Wisconsin-Madison. Email: dmrao@wisc.edu.

Objective: The objective of this secondary data analysis is to evaluate the effectiveness of a proven implementation strategy (NIATx) to reduce wait times to the receipt of substance use and mental health medications for individuals with these co-occurring disorders. Treatment for persons with co-occurring substance use and mental health disorders includes appropriate substance use and mental health medications, but timely access to such treatment is a barrier. NIATx has been broadly utilized by community addiction treatment agencies and has been shown to reduce wait times for appointments. However, its effectiveness at reducing wait times to access medications for individuals with co-occurring disorders has not been assessed. Such research is needed, as access to integrated services for these individuals represents a long-standing behavioral health problem and chances to get evidence-based treatments is suboptimal.

Methods: In a cluster-randomized wait-list control group design, programs (n=49) within community addiction treatment agencies across the State of Washington were randomized at baseline to cohort1 (NIATx) or cohort2 (Waitlist). Each program had three Dual Diagnosis Capability in Addiction Treatment (DDCAT) Index assessments. All program patient admissions 45 days prior to and after each DDCAT assessment date were identified in the Behavioral Health Data System. For each admission, medication encounters (substance use and mental health) 90-days post admission and patient demographics were extracted from the system. A medication encounter was defined as any event involving prescribing, dispensing, or administering of the medication. The outcomes were the time from admission to receive a substance use medication encounter (SUME), a mental health medication encounter (MHME), and the minimum time required to get both medications (SUMHME). The fixed factors were intervention (Cohort1 vs. Cohort2) and period (at Baseline, Year1, & Year2). A general linear model using logarithmic transformations of the three outcomes examined changes over time within assigned intervention strategies using SPSS v 25.

Results: Final medication sample sizes were: MHME (n=3,883), SUME (n=1,348), and SUMHME (n=929). For SUME, the results showed a significant decrease in the mean number of days required for the medication encounter at Year1 (--1.49 days, p =0.004) which further decreased by Year2 (-1.32 days, p=0.043) in cohort1. In cohort2, as hypothesized, there was no change at Year1 but there was a significant decrease in Year2 (-1.43 days, p=0.04). However, for MHME, there were no significant differences over time. For SUMHME, there was a significant decrease in the minimum wait time of 1.4 days (p=0.009) by the end of Year2 in cohort1 and a reduction of 1.37 days (p=0.027) during the intervention period for cohort2.

Implications/Conclusions: Results indicate that the use of NIATx implementation strategies reduces wait-times to access substance use medications and sustain the change. Reductions in the time for a MHME was not significant. NIATx strategies also reduced wait-times for encounters related to both medications, which is vital for individuals with co-occurring illnesses. The lack of significant reductions in time to MHME and the lagged effect associated with SUMHME may highlight challenges associated with establishing a co-occurring treatment program; however, further research is needed.

303-Community Pharmacy Staff Knowledge and Accessibility of Mental Health Resources. Ruby A, The University of Kansas and Balls Foods Stores, Graham E, Stafford E, Balls Foods Stores, Ruisinger J, Melton B, The University of Kansas School of Pharmacy. Email: lainey.ruby@ballsfoods.com.

Objective: The objectives of this study are to: (1) provide pharmacy staff with a mental health resource document, consisting of professional and self-help resources, to provide for a patient experiencing a mental health disorder (2) assess and improve pharmacy staff knowledge on appropriate professional and self-help resources, (3) assess pharmacy staff comfortability and perception in providing professional and self-help resources to a patient experiencing a mental health disorder. In 2019, the American Pharmacists Association (APhA) adopted policies that addressed pharmacists' role as an accessible resource for mental health. The APhA policy encourages employers to provide resources for pharmacy personnel to assist individuals regarding mental health. Employers can align with APhA policy by providing pharmacy staff a mental health resource document consisting of professional and self-help resources for use in referring a patient experiencing a mental health disorder. This document is adapted from Mental Health First Aid (MHFA), a program that teaches anyone how to help a person who may be developing a mental health disorder.

Methods: This is a pre and post intervention study conducted at 20 grocery store chain community pharmacies from September 2019 to January 2020. All pharmacy staff are eligible unless they completed MHFA training in the past three years. Participants will have a two week deadline to complete the pre and post intervention surveys, which include eight questions to assess participant demographics and one question per mental health disorder to evaluate knowledge of mental health resources. The surveys also include five questions related to current pharmacy practices for providing mental health resources and six questions addressing

comfortability and perception providing mental health resources and willingness to initiate conversation about mental health. The intervention provides a mental health resource document, adapted from MHFA, to pharmacy staff for use in referring a patient experiencing a mental health disorder to reliable professional and/or self-help resources. The mental health resource document contains both local and national professional resources and self-help resources for anxiety, depression, eating disorders, psychotic disorders, substance use disorders, and suicidal intention. The post intervention survey will be provided eight weeks after the intervention. The survey consists of open-ended, yes/no, a five-point Likert-type scale (1= strongly agree to 5= strongly disagree), and select all questions. Data will be analyzed using descriptive statistics, chi-square, and Wilcoxon signed ranked test, with an a-priori alpha value of 0.05. The study has been granted exempt status by the University of Kansas Medical Center Human Subjects Committee.

Preliminary Results: Research in progress.

Conclusions/Implications: Results may help determine if providing a mental health resource document to pharmacy staff for use in referring patients experiencing a mental health disorder, increases staff knowledge, perception, and comfortability providing resources.

304-Community Pharmacy-Based Depression Screening to Address Non-Adherence in People Living with HIV. Taylor T, Kwapong I, Bailey J, Carney M, Walgreens, McCants T, Wingate L, Howard University. Email: tiffanie.taylor@walgreens.com.

Objective: Depression has been identified as an adherence barrier in people living with HIV. The role of the community pharmacist in the collaborative behavioral health care team has not been thoroughly defined. This project was implemented to determine whether community pharmacist-conducted depression screenings will identify untreated depression in people living with HIV who are non-adherent to their antiretroviral therapy and increase access to depression treatment (pharmacological and/or non-pharmacological therapy) for people living with HIV. Following data analysis, investigators seek to identify a correlation between increased access to depression treatment and antiretroviral therapy adherence.

Methods: Trained pharmacists will recruit and offer informed consent to patients living with HIV from the Walgreens HIV clinical management program. Inclusion criteria for this study is as follows: age 18 to 64 years old, diagnosis of HIV, use of an ART regimen for at least 6 months, less than 95% proportion days covered of an HIV regimen, and use of ART alone or with antidepressants. Exclusion criteria includes: patients newly diagnosed with HIV and/or initiated on ART within the last 6 months, pregnancy, diagnosis of AIDS, and failure to obtain informed consent. Pertinent data such as inclusion and exclusion criteria will be collected from Walgreen's dispensing system and specialty management system. An initial assessment with the patient health questionnaire (2) depression screening tool will be conducted to evaluate the patient for risk of depression. A positive score will result in further evaluation using the patient health questionnaire (9) tool. If a patient screens positive on both tools a behavioral health provider referral will be issued by the pharmacist for further screening, diagnosis, and treatment. Pharmacists will follow-up with the patient at three to seven days, three weeks, and eight weeks post-screening to determine whether the patient had or has an appointment with the referred behavioral health provider and whether pharmacological and/or non-pharmacological treatment for depression was initiated. Proportion days covered of the HIV regimen will be measured six months after the screening and compared to baseline scores (six months prior to the screening). The primary outcome is the proportion of patients who achieve greater than 95% proportion days covered of an HIV regimen 6 months after a depression screening. Multivariate linear regression will be employed to determine the primary outcome.

305-Pharmacist-Managed Long-Acting Anti-Psychotic Injection Clinics in Community Health Centers -Effects on Adherence and Follow-Up. Van Voorhis L, CHAS Health. Email: lukas.vanvoorhis@wsu.edu.

Objective: This project intends to examine if the implementation of a pharmacist-managed long-acting antipsychotic injection (LAI) clinic will improve patient adherence and follow-up. Behavioral health is rapidly becoming a major topic in the national healthcare conversation. Patients with significant behavioral health disorders can be a difficult patient population to work with; having a psychotic disorder can make it a challenge to keep appointments and maintain medication adherence to say nothing of optimizing medication therapy. Patients often fall "off the grid" or "through the cracks" and are lost to follow-up for reasons that are preventable: they don't want to continue due to intolerable adverse medication reactions or they don't experience symptom resolution due to sub-optimal medication management. Utilization of LAIs is an important piece of the puzzle, however, to effectively assist these patients in their treatment, the attention and time of a healthcare professional is another, possibly more important piece. Psychiatrists and psychiatric nurse practitioners are in short supply and high demand making it difficult for patients to see the prescriber in a timely manner for psychiatric medication management. This deficit can be mitigated by the utilization of a pharmacist. Additionally, the introduction of a long-acting naltrexone injection has provided a potential in-road to expanding access to long-term treatment of substance use disorders -presenting an opportunity for pharmacists to contribute to the resolution of the opioid epidemic as well as expanded access to alcohol-dependence treatment.

Methods: Base-line adherence and follow-up data will be gathered from the EHR and out-patient pharmacy software to determine current level of utilization and adherence in patients with a behavioral health disorder who are currently being treated with a LAI in a community-health center. The managing pharmacist will follow these patients and track adherence and follow-up, including making telephone contact with the patient, scheduling and conducting pharmacist appointments between prescriber office visits, assess

current treatment regimens and make treatment recommendations based on patient response, administering LAIs, and coordinating community out-reach with other clinic departments to contact patients “lost to follow-up.” Adherence and follow-up rates will be assessed following a prescribed period of pharmacist intervention. Statistical analysis of gathered data will be conducted to determine the significance and impact of pharmacist intervention.

Preliminary Results: Report in Progress

Implications/Conclusions: Data gathering has not yet been initiated; per APhA abstract guidelines, data gathering and conclusions by pharmacy residents will be completed within the prescribed time-frame e.g. prior to 1 March 2020.

306-Optimizing Use of Antidepressant Medications in Primary Care. Vincent B, VandenBerg A, University of Michigan, Thompson A, University of Michigan College of Pharmacy. Email: bjvince@umich.edu.

Objective: Depression is a common psychiatric disorder affecting over 300 million people worldwide. . Depression is the leading cause of disability, and is a major contributor to the overall global burden of disease. Unfortunately, as the need for treatment of depression is expected to rise, the number of available psychiatrists continue to fall. The current shortage of psychiatrists provides a great opportunity for primary care providers to become the first to identify and initiate treatment for depression. The American Psychiatric Association recommends continuing to titrate an antidepressant until the patient reaches the maximum tolerated dose. While available depression guidelines report minimal effective doses, they do not suggest optimal target doses of antidepressants. Minimally effective doses demonstrate benefit over placebo in symptom improvement, but not necessarily rate of symptom remission. Previous landmark research concluded that maximizing doses for at least 8 weeks before deciding an intervention failed was an effective means to achieve remission. With the negative impact depression can have on patients, it is crucial to evaluate prescribing patterns of antidepressants and determine if changes are needed. The purpose of this study is to evaluate opportunities for improvement in patients who are not optimized on an antidepressant medication within primary care at Michigan Medicine. Our primary endpoint is to identify the number of patients not on an optimized dose of an antidepressant, defined as 65% of the maximum labeled dose, and to evaluate frequency of monitoring of PHQ-9s within this patient population. Once patients who are not optimized on their antidepressants are identified, we aim to develop educational materials for PCPs regarding effective doses of antidepressants, how to properly titrate antidepressants to optimized doses, and monitoring parameters for depression.

Methods: Retrospective cohort study of adult patients receiving primary care at Michigan Medicine started on an antidepressant for the treatment of depression for at least one month between July 1, 2018 to June 30, 2019. Pregnant patients will be excluded from data analysis. Data to be collected include: patient demographics (gender, race, age, PMH), laboratory data (SCr, AST/ALT), vitals, PHQ-9 scores and reporting of adverse drug events. Regarding pharmacotherapy, we will collect: drug name, class, initial and titrated doses, duration of therapy, reason for discontinuation when warranted, second-line therapy, and augmented therapy. Additionally, we will collect data on patients followed by psychiatry or our behavioral healthcare collaboration program. Measures of central tendency will but used for baseline characteristics. A multivariate regression will be used for our primary end point.

Results: Data collection and analysis are in progress.

Implications/Conclusions: Data from this study will be used to inform providers of prescribing patterns for antidepressants in primary care across or health-system.

307-Assessment of Prevalence and Severity of Depression Symptoms In First, Second and Third Year Pharmacy Students. West J, Williams C, Turner K, Comeau J, University of Louisiana Monroe College of Pharmacy. Email: westjt@warhawks.ulm.edu.

Objective: Students enrolled in graduate school programs, such as the Doctor of Pharmacy program (PharmD), may experience a high degree of stress due to the intensive workload along with economic and social factors. The incidence of depression and possible interventions have been studied widely in other college student populations, but not in pharmacy. For the purpose of this study, we will evaluate the prevalence and severity of depression at three separate times of students in their first, second, and third year of the PharmD program using a screening tool. With this data, we can potentially target the population at risk and implement specific programs to promote awareness and reinforce resources to deal with this mental illness.

Methods: The study is being conducted during the fall semester of 2019. Pharmacy students from the University of Louisiana Monroe College of Pharmacy are invited to participate in an online survey (administered in October 2019) via the professional online survey software eSurveysPro. The significance of the design is to assess and compare depressive symptoms of students at different points in the PharmD program. A link to a survey of 7 demographic questions and 10 depressive symptoms questions has been emailed to all first, second and third year pharmacy students. This study was approved by the Institutional Review Board. After providing informed consent, each participant will then report demographic data and information on perceived family support.. The survey incorporates the 9-item depression screening component of the Patient Health Questionnaire (PHQ-9), and descriptive statistics will then be used to report the rates of depression and depressive symptoms. There is an additional 10th question that asks "if you checked off any problems, how difficult have these problems made it for you to do your work, take care of things at home or get along with people?" Preliminary Results: Thus far, there have been 17 responses to the survey. Of the respondents so far, 52% have a history of depression. Only 35% admit to taking medication for depression. Among the respondents, 62% reported depressive symptoms. Related to the ability to do work, perform activities of daily living, and interact with other people, 32% of respondents reported these

actions to be very to extremely difficult in the survey.

Final Results: In total, there were 87 responses to the survey (P1 -26, P2 -33, P3 -28). Of the responses of the p1 class, approximately 27% reported having a history of depression, only one admitted to taking medication for depression and 69% reported having depressive symptoms according to the phq-9. in the p2 class, 30% reported a history of depression, 18% reported taking medication for depression and nearly 70% reported depressive symptoms. in the p3 class, 25% reported a history of depression, 21% reported taking medication for depression and nearly 61% reported depressive symptoms. Related to the ability to do work, take care of things at home or get along with people, nearly 35% of p1 respondents, 30% of p2 respondents and 25% of p3 respondents reported this to very to extremely difficult.

308-Evaluation of a Multi-State Pharmacy-Led Mental Health First Aid (MHFA) Training Initiative. Witry M, University of Iowa College of Pharmacy, Pudlo A, Iowa Pharmacy Association, Karamese H, University of Iowa Center for Evaluation and Assessment. Email: matthew-witry@uiowa.edu.

Objective: Mental Health First Aid (MHFA) is a training designed to teach skills needed to identify and provide initial support to persons experiencing mental health crises in the community. A recent effort trained 5 pharmacists to conduct MHFA trainings for pharmacy professionals in several U.S. states. The objectives of this study were to 1) assess participant reluctance and confidence related to providing MHFA, 2) describe participant use of MHFA skills since their MHFA training, and 3) collect open-ended feedback about MHFA training experiences and using MHFA in practice.

Methods: This study used a cross sectional electronic survey of pharmacy professionals (pharmacists, faculty, student pharmacists, and technicians) that participated in a pharmacist-led MHFA training from one of the 4 pharmacist trainers during 2018. Surveys were anonymous and distributed in May and June, 2019 using 4-contacts, each about 1 week apart (pre-notification, main, and 2 reminder emails). The 5 trainers provided email lists based on those that completed the 8-hour MHFA training. The survey assessed beliefs/reluctance (6-items), confidence (7-items), and MHFA skill use (9-items) using established measures. Open prompts included challenges using MHFA in practice, suggestions for training and supporting pharmacists, and other comments. Basic demographics were assessed to describe the sample. Analyses included descriptive statistics and a basic content analysis process to sort responses into topics.

Final Results: Ninety-eight out of 227 participants responded to the survey. Four emails were undeliverable yielding a usable response rate of 43.9%. Almost half of the participants are practicing pharmacists, a quarter were students and 14 did not answer. Sixty-two percent were female. Overall, respondents had condusive scores on reluctance items, although some reported not knowing most patients well enough to know when they are in crisis. Overall, participants reported high levels of confidence in performing MHFA skills, particularly listening nonjudgmentally and encouraging persons to seek professional help. Since being trained, respondents reported asking someone about their distressed mood (82%) asking someone if they are considering suicide (43%), referring someone to resources because of mental health crisis (61%), and engaged with a mental health crisis resource on behalf of someone (51%). Open ended responses suggested participants had concerns related to time, privacy, availability of mental health providers, stigma, lack of background on patients. Respondents were interested in continuing education related to MHFA topics and tools for practice.

Conclusions/implications: Pharmacy professionals had high levels of confidence in using MHFA skills and conducive responses to reluctance items. Most participants had used skills learned in MHFA to engage with patients who may be experiencing mental health crises, refer them to resources. Future work can reinforce MHFA learnings, keep those trained engaged, and train additional pharmacy professionals in MHFA.

Nuclear Pharmacy

309-Beyond-Use Date (BUD) of Sincalide (Kinevac®), a Nuclear Medicine Diagnostic Aid, Within the Realm of USP General Chapter <797>. Christoff J, Belanger E, Wolf S, Zatt S, DePeel N, Rojeab Y, Ohio Northern University. Email: j-christoff.1@onu.edu.

Objective: This project evaluated the chemical stability of sincalide (Kinevac®) at two common storage conditions, room temperature and refrigeration, to ascertain chemical stability for an appropriate Beyond-Use Date (BUD) as defined within USP General Chapter <797>. Sincalide is a peptide hormone product administered by intravenous injection as an aid for diagnostic imaging of hepatobiliary conditions. Current product labeling states a post-reconstitution shelf-life of 8 hours at room temperature, but this recommendation was changed by the manufacturer from a previous recommendation of 24 hours at room temperature. With recent, and frequent product shortages, there is both clinical and economic value in the experimental determination of the true chemical stability of this agent.

Methods: Sincalide vials were reconstituted with 5 mL of Sterile Water for Injection (SWFI), and then stored at room temperature or in a refrigerator (n = 4 each) for the duration of the study. Samples were collected at pre-determined time points. A validated HPLC (high performance liquid chromatography) analytical method was employed for quantification of the active ingredient in each sample.

Final Results: Our findings demonstrate that sincalide remained chemically stable for at least 8 days (192 h) at both room temperature and refrigerated storage conditions.

Implications/Conclusions: This data supports that from a chemical standpoint, sincalide may possibly be stored post-reconstitution for

a longer period of time than currently recommended by the manufacturer, based on compounded sterile preparation techniques that are in compliance with guidance from USP General Chapter <797>.

310-Determining Beyond Use Date for Tc-99m Labeled Pyrophosphate when Prepared with Minor Deviations. Heim J, Baumgartner M, Byun J, Galbraith W, University of Oklahoma College of Pharmacy. Email: Johnathan-Heim@ouhsc.edu.

Objective: Stability information used in assigning beyond use dates (BUD) for radiopharmaceuticals is not well published. Valid stability information for assigning BUD can only be obtained through product-specific experimental studies. Technetium-99m labeled pyrophosphate (Tc99m-PYP) historically was developed as a nuclear medicine radiopharmaceutical bone imaging agent. It has also been used in the past for myocardial infarct imaging. Recently Tc99m-PYP has been prescribed to image Transthyretin Cardiac Amyloidosis which can cause heart failure and left ventricular wall thickening. Compared to invasive biopsy, Tc99m-PYP can distinguish the transthyretin amyloidosis (ATTR) from other subtypes and has the advantage of being non-invasive. The commercially available PYP has a disadvantage of a 6 hour expiration after preparation. An extended BUD allows patients further from the nuclear pharmacy to have access to this nuclear medicine procedure. Objective: To determine the stability of Tc99m-PYP over 12 hours using radiochemical purity (RCP) as part of establishing BUD for a master formulation record (MFR).

Method: Over three months, commercially available PYP from two manufacturers was radiolabeled (approximately 100 mCi/3 mL) in a centralized nuclear pharmacy setting in accordance with USP <797> and pending <825>. Vials were stored according to manufacturers recommendations prior to and after radiolabeling. Samples of vial content were drawn into 3 mL HS syringes and stored at 20°C to 25°C for up to 12 hours. RCP was evaluated initially and every hour up to 12 hours using a method previously described by Zimmer (2011). Correlations between Tc99m mole fractions and storage times to RCP were calculated.

Results: 12 samples were analyzed. Four different lots of PYP were used. The average activity was 100.95 mCi (SD ± 4.8 mCi) in a total reaction volume of 3 mL. The average Tc99m mole fraction was 0.42 (SD ± 0.2, range 0.28 to 0.77). The mean RCP of 11 kits was 99.1% (SD ± 1.4%) initially and 98.8% (SD ± 1.6%) at 12 hours. One kit failed RCP at 5 hours with a 72.9% RCP of which TcO4 portion was 26.9%. The failed kit was prepared with 106 mCi in 2.2 mL. There was a strong correlation between the total kit volume and RCP (r=0.84).

Conclusions: Taking into consideration elution quality and storage conditions, 11 of the 12 Tc99m-PYP kits prepared with minor deviations met USP RCP parameters of greater than 90% at 12 hours post preparation. Considering the one kit failed at 5 hours post preparation more studies are needed to confirm expanding the BUD past the 6 hour manufacturer recommended in-use time.

311-Retention of Lu-177 Labeled Peptide in Dose Vial and Administration Tubing. Mastascusa N, University of Iowa Hospitals and Clinics. Email: nmastasc@healthcare.uiowa.edu.

Objective: A Lu-177 radiolabeled peptide is currently undergoing investigation in a clinical trial for the treatment of prostate tumors that express PSMA receptors. To ensure accurate calculation of the dose delivered to the patient as part of regulatory compliance, residual measurements of the radiopharmaceutical in the dose vial and administration tubing were obtained after each administration.

Methods: Under the IND protocol, the Lu-177 radiolabeled peptide is supplied in a volume of approximately 8-10mL in a 20mL vial. For administration, the vial diaphragm is punctured with an IV spike infusion set and infused directly into the subject. Upon completion of radiopharmaceutical infusion, the IV line is flushed with normal saline. After each administration, the residual activity remaining in the dose vial and in the administration tubing was measured separately in a dose calibrator. Due to the short time interval (generally within an hour) between the initial measurement of the dose vial and subsequent measurements of residual activity in the dose vial and administration tubing, activity values were not corrected for decay in the vial or administration tubing. Mean and standard deviation for retention in dose vials and in administration tubing for all administrations to date (N=17) were calculated as percentages of the initial activity in the dose vial.

Results: Retention in the dose vial averaged 0.24 +/-0.07 % with a range of 0.10 -0.40 %. Retention in the administration tubing averaged 1.62 +/-0.31 % with a range of 1.27 – 2.60 %. Total retention averaged 1.92 +/-0.42 % with a range of 1.40 – 2.91 %. Hence, in all cases, ≥ 97.1% of the radiopharmaceutical dose was administered.

Conclusion: Measurement of residual radiopharmaceutical in the dose vial and in administration tubing following infusion of the Lu-177 radiolabeled peptide confirmed ≥97% of the initial radiopharmaceutical therapy dose was consistently administered to the patient.

312-Sodium Iodide I 131 Solution; Sterility and Pyrogenicity Analysis of a Commercially-Available Oral Product. Moore R, Long Island University Schwartz College of Pharmacy, Simon-Clarke G, Nuclear Diagnostic Products of New York. Email: rachel.moore@myliu.edu.

Objective: Radioiodine (sodium iodide I 131 solution, NaI I-131, Na131I) has been used clinically for the treatment of hyperthyroidism as well as thyroid cancer since 1941. Radioiodine is typically administered orally in the outpatient setting. The commercially available radioiodine is labeled for oral administration and has no information regarding pyrogenicity or sterility . In 2017, our practice received over 100 prescriptions for radioiodine to treat feline hyperthyroidism. Feline hyperthyroidism is the most common endocrine disorder in the feline population. Treatment options for hyperthyroidism in this population include antithyroid drugs, surgical removal of

adenomatous thyroid tissue and the administration of radioiodine. Radioiodine provides a simple, effective, and safe treatment option for cats with hyperthyroidism as well as eliminating the need for anesthesia and the risk for hypoparathyroidism . Subcutaneous injection is the preferred method of administration . Prior to subcutaneous injection, the solution is processed through a 0.22 micrometer filter (sterilization by filtration) into a 10 mL vial. This process increases the radiation burden for handlers . The objective of this analysis was to test unfiltered commercial radioiodine solution for sterility and pyrogenicity contamination.

Methods/Designs: Twelve radioiodine solutions where tested for pyrogenicity and sterility using the USP <85> and USP <71> parameters. The testing was performed in a commercial nuclear pharmacy dispensing approximately 500 unit doses a day to a wide range of populations (e.g. pediatric, adult, veterinary). Pyrogen testing was carried out using the Charles River PTS rapid pyrogen testing system (Charles River, Cambridge, PTS100). Sterility testing was carried out using commercially prepared media of FTM and TSB (BBD, Cape Cod). The radioiodine was used in routine capsule compounding in a negative pressure charcoal vented hood and stored at room temperature before sampling three to five months post calibration. Sterility samples were observed over 14 days for clarity or turbidity. Results were recorded as negative (-) to denote clear sterility sample or positive (+) if turbid or cloudy to denote a failed sterility test. Pyrogen testing was recorded as congealed (+) or not congealed (-). Results: Radioiodine solutions of various concentrations, calibration dates with greater than ninety (90) days in storage post decay were tested between September 2018 and June 2019. All solutions proved to be negative (-) following the fourteen (14) day media/biological testing denoting sterility. As to the pyrogens testing, all but one resulted in a positive (+) test despite its negative 14 day media/biological testing.

Conclusion/Implications: All 12 samples were sterile and 11 of 12 samples passed the pyrogen test. The positive pyrogen result was speculated to be due to a rise in the manufacturer suggested incubation period during the test. The results obtained demonstrate that the commercial radioiodine solution is sterile. The decision as to not filter will depend on the facility's Standard Operating Procedures (SOP) when changing the dosage form from a commercial oral product to a parenteral preparation. The balance between radiation exposure and redundant sterility processing should be considered.

313-Lutathera: The First Radiopharmaceutical Indicated for the Treatment of Gastroenteropancreatic Neuroendocrine Tumors. Ridley E, University of Arkansas for Medical Sciences. Email: emridley@uams.edu.

Objective: Lutetium 177 dotatate or Lutathera is a somatostatin analog labeled with Lutetium-177, a beta-emitting radioisotope. Lutathera is indicated for the treatment of somatostatin receptor-positive gastroenteropancreatic neuroendocrine tumors (GEP-NETs), including foregut, midgut, and hindgut neuroendocrine tumors in adults. Lutathera is the first radioactive drug FDA approved to treat these rare GEP-NETs. The objectives for this presentation are to educate providers on this revolutionary new treatment option by going over the indication, cost, drug properties, administration, and the benefits of Lutathera.

Methods: I have/will acquire all of the pertinent information through patient interviews, first-hand observation of administration, and speaking with a representative of the drug company as well as nuclear medicine technologists.

Preliminary/Final Results: A phase 3 trial regarding the treatment of midgut neuroendocrine tumors with Lutathera "resulted in markedly longer progression-free survival and significantly higher response rate than high-dose octreotide LAR" (1). An ongoing patient case has also already shown improvement in response rate to Lutathera as opposed to previous treatment with octreotide LAR.

Conclusions/Implications Lutathera is a newly approved radiopharmaceutical that has shown remarkable results in the treatment of GEP-NETs. It is important for providers to be aware of this emerging treatment and to understand how it works and what to expect, including the side effects and drug interactions associated with this treatment. 1. Strosberg J, El-Haddad G, et al. (2017). Phase 3 Trial of 177Lu-Dotatate for Midgut Neuroendocrine Tumors. The New England Journal of Medicine, 376(2): 125-135.

OTC, Self-Care, and CAM

314-Myo-inositol, Alpha-lipoic Acid and Berberine for the Treatment of Metabolic Abnormalities in Women with PCOS: A Systematic Review. Baigi T, Thamadilok S, Corsi G, Dawson A, MCPHS University. Email: tbaig1@stu.mcphs.edu.

Objective: Polycystic ovary syndrome (PCOS) is a metabolic and endocrine disorder that affects 7-10 million women in the United States. Several studies have identified hyperinsulinemia as the metabolic parameter responsible for both the metabolic syndrome and the polycystic ovaries developed in women with PCOS. Therefore, most PCOS patients are treated with insulin-sensitizing prescription drugs. However, patients' desire to use dietary supplements is increasing, with the National Institutes of Health estimating that more than half of all Americans use dietary supplements. Myo-inositol (MYO), alpha-lipoic acid (ALA), and berberine (BBR) are dietary supplements that have insulin-sensitizing properties and therefore could be potential non-prescription options for PCOS. Several studies have investigated these three dietary supplements individually, but presently, there are no articles comparing them against each other. Objective: The aim of this study is to perform a systematic review to identify the most effective option among MYO, ALA and BBR in the treatment of metabolic alterations in women with PCOS.

Method: A systematic search was performed using the following electronic databases: Alt HealthWatch, AMED, The Cochrane Library, Embase, Medline and Natural Medicines. The search terms used were myo-inositol, alpha-lipoic acid, berberine combined with OR, and polycystic ovary syndrome combined with AND. Search results were limited to female human subjects. Meta-analyses, randomized control clinical trials and systematic reviews investigating the effect of these dietary supplements on metabolic

parameters in women with PCOS were included. Studies reporting on the effect of MYO, ALA and BBR in combination with other drugs, as well as in-vitro experiments were excluded.

Results: A total of 13 articles were included in this review, with 7 investigating MYO, 4 investigating ALA, and 2 investigating BBR. Neither of the articles reviewed for BBR showed any significant changes in the metabolic abnormalities in women with PCOS. All 13 articles included the metabolic outcomes of Homeostatic Model Assessment of Insulin Resistance (HOMA-IR), blood glucose and blood insulin levels. Both MYO and ALA significantly decreased these parameters compared to placebo or baseline. HOMA-IR decreased with a range of 20.8%-50.14% with MYO versus 44.8%-45.5% with ALA. For all other metabolic parameters investigated, only MYO showed significant improvements.This includes 2 studies of MYO showing lipid profile improvements with significantly decreased levels of LDL-C, total cholesterol and triglycerides, and increased levels of HDL-C. Additionally, MYO significantly decreased systolic and diastolic blood pressures.

Conclusion: Based on the findings, MYO is the most effective option among the insulin-sensitizing dietary supplements investigated. MYO was the only supplement to have positive impacts on all metabolic parameters including improving insulin resistance, normalizing glucose and insulin levels, improving blood pressure and lipid levels. Pharmacists and other healthcare providers should recommend MYO for women with PCOS seeking dietary supplement treatment. Providers should discourage patients from using BBR for PCOS as current evidence does not support its use. Limitations of this study include the challenge of comparing multiple studies with heterogeneity and limited availability of high-quality evidence on dietary supplements. Future studies could include direct head-to-head comparisons particularly of MYO and ALA.

315-Integrative Health in a Supermarket Chain Pharmacy: A Pilot Program. Blaakman A, Gardiner C, Scozzaro M, Wegmans Food Markets, Inc., Snyder J, Wegmans School of Pharmacy. Email: arb07778@sjfc.edu.

Objective: An integrative medicine program was developed and implemented at a regional supermarket pharmacy with the goal of improving the overall health and wellness of patients through a comprehensive approach to care. This program was designed to assist patients in the management of disease states and/or drug-induced nutritional deficiencies by utilizing integrative and complementary medicine approaches. The key component of the program includes pharmacist recommendations of evidence-based quality supplements and foods to address nutritional concerns. The objectives of this study are to determine patient acceptance of supplement and dietary recommendations provided by pharmacists as well as patient perceptions of integrative health services.

Methods: The program's piloted supplements include vitamin D, vitamin B12, and marine omega-3 fatty acids. Each individual supplement will be targeted toward a prescription medication or medication class using evidence-based data. Based on osteoporosis guidelines, vitamin D supplementation will be recommended for patients with a prescription for a bisphosphonate, teriparatide, or denosumab. Patients with both a prescription for metformin and a proton pump inhibitor will be targeted for potential vitamin B12 supplementation due to the risk of both medication classes causing vitamin B12 deficiency. Finally, marine omega-3 fatty acids will be targeted for patients on sacubitril/valsartan therapy for heart failure based on recommendations made by the American Heart Association. Patient education sheets that include basic information about the supplement and its role in the targeted disease state will be provided with identified prescriptions. Two approaches for outreach will be utilized and compared for efficacy and efficiency. Identified prescriptions will either have a note indicating a need to counsel printed on the prescription receipt, or an electronic notification in the prescription dispensing system will alert pharmacists to complete a brief questionnaire. Both approaches will prompt the pharmacist to have a conversation with the patient regarding the recommended supplement or dietary source and encourage follow-up with the primary care provider. Along with the patient handout, educational information and conversation guides will be available for pharmacists to aid in these discussions. During the interaction pharmacists will provide disease state education, safe and effective food and supplement recommendations, as well as a coupon for the specific supplement or dietary source indicated. To measure the impact of the program, a brief voluntary questionnaire will be completed via telephone with participating patients at the time of recommendation and 90 days later. Surveys will investigate patient's acceptance of integrative medicine recommendations, willingness to receive integrative medicine advice from the pharmacist and likelihood to seek out similar advice in the future. Descriptive statistics will be used to analyze the data collected.

Results: Research in progress

316-Assessment of Hemp-oil Based Cannabidiol (CBD) use in a Community Pharmacy Setting. Gicewicz E, Gatewood S, Nabpara P, Goode J, Virginia Commonwealth University, Kaefer T, Bremo Pharmacy. Email: gicewicze@vcu.edu.

Objective: The 20189 Farm Bill allows for the commercial sale of hemp-based products, including cannabidiol (CBD) as long as it contains less than 0.3% delta-9 tetrahydrocannabinol (THC). Multiple formulations and brands of CBD have entered the marketplace and are not approved or regulated by the Food and Drug Administration (FDA). Objectives: 1) Characterize the use of hemp-oil based Cannabidiol (CBD) including brands, formulations, and reasons for use. 2) Identify barriers related to the use of hemp-oil based CBD.

Methods: A three-month prospective descriptive study will be conducted in an independent pharmacy with two locations in Richmond, Virginia. A questionnaire was developed by the investigators based on the literature to assess CBD use, including; type, formulation, indication, knowledge, perception, and barriers to use. The survey contains a total of 19 questions, 18 multiple choice questions, and one open-ended response. Of the multiple-choice questions, three are demographic questions to obtain age, gender, and race. Participants who have never taken CBD products will only complete the first six questions. Participants will be recruited at

community events and using a sign placed in the pharmacy. The survey was pretested in 25 people who do not work in a setting where CBD is sold. The inclusion criteria is any individual aged 18 years and older. The final sample size of the study will determine the appropriate test for analysis of the data collected from the survey. SAS software will be utilized to complete the analysis of the data.

Results: Research in progress.

Conclusions/Implications: Research in progress The results of this study may provide insight into the types of information and education needed about hemp-based CBD. Additionally, it will help pharmacists understand how and why patients are using CBD as foundational data for future research.

317-Utilization of a Patient Intake form Documenting Dietary Supplement and Tobacco use to Improve Identification of Drug Interactions. Keresey K, Safeway Southwest Division, Horst S, Lesser C, Safeway/Albertsons, Hamper J, Albertsons. Email: Katelyn.Keresey@safeway.com.

Objective: The National Institutes of Health defines a dietary supplement as a product containing "one or more dietary ingredients or their components." Supplements may be initiated at the recommendation of a health care provider or at the patient's discretion, and a 2017 survey showed 75% of adults had taken a supplement in the past year. Those utilizing supplements for chronic conditions often are also on prescription medications for the same conditions. While prescriptions are well documented in the medical chart and pharmacy patient profiles, supplement use may or may not be recorded. Current data shows that up to 40% of patients do not disclose supplement use to providers, making poor communication a major contributor. This presents potential patient safety concerns, as patients and health care providers may miss potential interactions without this documentation. Objectives: To evaluate the effectiveness of a standardized intake form collecting information on use of dietary supplements and tobacco products to identify: the number of interactions, types of interventions resulting from collected information and burden on workflow, if any, from adding intake form information.

Methods: This is a prospective, descriptive, mixed-methods study to be conducted between November 2019 and February 2020. An intake form developed for the study to collect self-reported dietary supplement and tobacco use will be provided by pharmacy staff to patients picking up a prescription, updating their current profile, or creating a new profile at two supermarket-based community pharmacies in the Phoenix metropolitan area who consent to the use of their information for research purposes. Four $75 gift cards will be raffled at the study's conclusion to incentivize patient participation. Supplement information will be entered into the patient profile and then checked for interactions with current prescriptions using the website Facts and Comparisons. The pharmacist will note on a separate spreadsheet any related interactions identified and, if appropriate, the type of intervention needed. Based upon 2018-2019 store data, 4,000 patients will pick up prescriptions during the data collection time period. With this population, at least 351 completed forms are required to achieve 95% confidence. Outcome measures include the number and types of interventions found compared to all interactions identified, and the types and quantity of supplements patients are using. The co-investigator (KK) will utilize metrics related to the speed of task completion and interview pharmacy staff to determine whether additional burden to workflow occurred. Exclusion criteria include legal minors, except with approval from a parent or guardian, and patients who have already completed the form once, unless they are providing an update to the previous form. Patients may also opt out of their data being used for research purposes.

Preliminary Results: Institutional Review Board approval anticipated in November 2019.

Conclusions: Although there is no data at this time, this study may show that gathering dietary supplement and tobacco information from patients aids in the identification of drug-drug and drug-disease interactions. This could have a positive impact upon patient care by helping pharmacists alert patients and prescribers to potential risks with a specific dietary supplement.

318-Assessment of Knowledge, Attitudes, and Behaviors in Over-the-Counter Medication Counseling by California Community Pharmacists to Pregnant Women: A Prospective Cross-Sectional Survey. Khandijian K, Leon C, Bach A, Xavioer S, Chapman University School of Pharmacy. Email: khand103@chapman.edu.

Objective: The objective of this study is to assess the knowledge, attitudes, and behaviors in over-the-counter medication counseling by community pharmacists in California to pregnant women. Community pharmacists are one of the first health care professional patients reach out to for triage and management of common ailments. With up to 70% of women in the United States taking at least one medication during the first trimester of pregnancy, it is crucial for pharmacists to be aware of appropriate self-care treatment in this population. Many common ailments that occur during pregnancy, such as constipation, nausea and vomiting, fever, congestion, allergic rhinitis, insomnia, heartburn, and hemorrhoids, can be adequately managed with self-care interventions. Understanding the knowledge, attitude, and behaviors of pharmacists in assisting pregnant women in self-care will shed some light on their preparedness for such responsibilities and help identify areas for improving their delivery of these services. Primary outcomes of this study include community pharmacist knowledge in self-care management of common pregnancy related ailments, perceptions regarding community pharmacist roles in management of these ailments, and current practice behaviors. The secondary outcomes of this study are to assess the impact of pharmacist specific factors including perceptions regarding training, availability of resources, and level of experience in counseling pregnant patients.

Methods: An anonymous online survey was disseminated via Qualtrics® to members on a list provided by the California Pharmacists'

Association (CPhA). The survey was open for response collection between April and June of 2019. The survey was divided in three sections: 1) demographics, 2) case vignettes, and 3) practice-related factors. Questions were presented in different formats including multiple choice, select all that apply, and free-response. The survey took no more than 25 minutes to complete, and the first 100 eligible participants were able to receive a $20 gift card. Eligible participants were identified as those who were practicing community pharmacists within the state of California. Descriptive statistics will be employed for data analysis.

Results: Research in-progress.

Conclusion/implications: Research in-progress.

319-SAMYAMA-YIN: Stress, Anxiety, and Mindfulness: A Yin Yoga and Meditation Assessment. Lemay V, Buchanan A, University of Rhode Island College of Pharmacy, Hoolahan J, Greenline Apothecary, Margraf A, Rhode Island Hospital. Email: glemay@uri.edu.

Objective: To evaluate the impact of a 6-week yin yoga and meditation intervention on College of Pharmacy students' and faculty members' stress perception, anxiety levels and mindfulness skills.

Methods: At the University of Rhode Island (URI) in Spring 2019, College of Pharmacy (COP) students and faculty participated in a 6-week pilot program approved by the Institutional Review Board comprised of a 60-90 minute yin yoga class followed by guided meditation. Yin yoga was selected for its quiet meditative style. Both practices were delivered by trained faculty at the COP. Participants completed a pre-and post-questionnaire to evaluate potential changes in the following outcomes: perceived stress scores, anxiety scores and mindfulness skills. The questionnaire was comprised of three self reporting tools: Beck Anxiety Inventory (BAI), Perceived Stress Scale (PSS), and the Five Facet Mindfulness Questionnaire (FFMQ), which included Observing (FFMQ-O), Describing (FFMQ-D), Acting with Awareness (FFMQ-AwA), Non Judging of Inner Experience (FFMQ-NJ), and Nonreactivity to Inner Experience (FFMQ-NR). A Wilcoxon rank sign test was used to assess statistical differences between pre-and post-scores, and Fisher's Exact test was used to analyze categorical data.

Results: Twenty-one participants, 14 students and 7 faculty (ages 18-66, 76% female) successfully enrolled. Results were analyzed for all participants who completed both pre and post surveys (n = 20). Evaluation of three and six month follow-up data is pending to evaluate a sustained effect. Among the 20 participants, 70% and 60% reported previously practicing yoga and meditation, respectively; however, none self-identified as experienced. BAI scores dropped an average of 5.8 points (Median = -4.5; 95% confidence interval (CI) for mean: -10.20, 1.40; P value = 0.01). PSS scores dropped an average of 4.5 points (Median = -4.5; 95% CI: -6.87, -2.13; P value = 0.002). Significant changes were seen in 4 of 5 mindfulness facets. FFMQ-O scores increased by an average 4.6 points (Median = 3.5; 95% CI = 2.10, 7.00; P value 0.002). FFMQ-D scores increased 3.0 points (Median = 3.0; 95% CI = 0.02, 5.88; P value = 0.04), FFMQ-NJ scores increased 2.45 points (Median = 4.0; 95% CI = -0.07, 4.97; P value = 0.05) and FFMQ-NR scores increased by 4.0 points (Median = 4.5; 95% CI = 1.90, 6.00; P value = 0.002). Total mindfulness scores increased by 15.1 points (Median = 13.0, 95% CI = 5.74, 24.36; P value = 0.004).

Conclusions/Implications: Pharmacy students and faculty demonstrated a reduction in stress and anxiety levels after completing a 6-week yin yoga and meditation program. These results suggest adopting a mindfulness practice for as little as once per week for 6 weeks may reduce stress and anxiety in pharmacy students and faculty. The inclusion of yoga and meditation within a College of Pharmacy may lead to improved well-being and resiliency and a reduction in burnout within the pharmacy learning environment.

320-Assessment of Knowledge and Perception of Cannabidiol (CBD) Oil in Adults. McGrew D, Peoples A, Long B, University of Mississippi School of Pharmacy. Email: dmmcgrew@go.olemiss.edu.

Objective: Cannabidiol (CBD) products have grown increasingly popular across the United States. However, there is limited research regarding the public's knowledge and perception of CBD products. Specific concerns include the contents of the available products, the regulation of these products, and federal and state legal parameters. The purpose of our study was to examine the knowledge and perception of CBD oil in adults.

Methods: This research was approved by the University of Mississippi Institutional Review Board. The study involved a survey consisting of 17 multiple-choice questions, with areas to include additional comments.The surveys were administered at the Mississippi Dental Mission of Mercy event in Greenwood, Mississippi. When patients arrived at the pharmacy, they were asked if they would be willing to fill out the survey. If they agreed, they were given a cover letter that explained the purpose of the survey, the time needed to complete the survey, and the risks and benefits associated with the survey. After completion, the surveys were put into a folder, and no names were provided to ensure anonymity. Ninety-six participants agreed to complete the survey. The data was then entered into a spreadsheet, and a means analysis was conducted.

Final Results: The majority of participants were female (61.46%), African American (83.33%), and between the ages of thirty-five to fifty-four years old (35.42%). When asked what CBD oil stood for, 52.08% did not know. When asked what ingredient was equivalent to CBD oil, 56.25% did not know. When asked about the legal status of CBD oil, 60.42% did not know if CBD oil is legal in the United States, and 63.54% did not know if it is legal in Mississippi. When asked if CBD oil should be legal, 41.67% reported that it should be legal for everyone, and 20.83% reported it should be legal for certain medical conditions. Participants reported that they believe CBD oil may be beneficial for chronic pain (22.93%), anxiety (17.07%), and depression (14.63%). When asked about the availability of CBD oil, 53.13% of participants reported that CBD oil should be available in pharmacies by prescription, and 38.54% reported that the

minimum age to buy CBD oil should be twenty-one. The majority of participants have never used CBD oil (86.46%), and 25.78% have never seen CBD oil advertised. When asked about speaking to a physician or pharmacist about using CBD oil, 47.92% of participants reported that they would feel comfortable doing so.

Conclusions/Implications: Results revealed that many adults of the general public lack fundamental knowledge of CBD oil, such as what CBD stands for, it's ingredients, and it's legal status within Mississippi and the United States. Most adults believe that CBD oil should be legal, and available to those twenty-one years of age or older with a prescription, without regard to the presence of certain medical conditions. The results also showed that while most adults have never used CBD oil, they believe that it may be beneficial, and would be very comfortable speaking with either a physician or pharmacist about it.

321-Development of a Novel Point-of-Care Service for Acute Illness at an Independent Pharmacy. Myers A, Bias A, The Ohio State University, Tubuo E, Powell Pharmacy. Email: myers.1292@osu.buckeyemail.osu.edu.

Objective: The aims of this project are to (1) develop a novel point-of-care service to address acute illness at the patient's convenience, (2) assess the clinical impact of the service, (3) evaluate the financial impact of the service and (4) assess patient satisfaction with the service. With a shortage of primary care providers, patients often find themselves turning to emergency departments or facing long lines in urgent care clinics to address acute illness. This may lead to inappropriate use of the health care system or a significant time spent away from home when a patient feels poorly. Point-of-care testing has been a topic of interest in the pharmacy profession for many years with rapid diagnostics available to address acute illness. For patients who are acutely ill, a rapid diagnostics point-of-care service coupled with home delivery may provide patients with quicker, more affordable relief through faster diagnosis and home delivered therapy.

Methods: "Pharmacy in a Flash" is a novel pharmacy service which utilizes Physician 360 and home delivery to address a patient's acute illness at their convenience. Physician 360 is an at-home patient-administered rapid diagnostics point-of-care package and is available for use when patients suspect they have influenza, strep throat, urinary tract infections, or anemia. With "Pharmacy in a Flash", when a patient suspects they may have one of these illnesses, they contact the pharmacy and the appropriate rapid diagnostic test is delivered to the patient's home. The patient administers the test, consults the online physician service provided by Physician 360, and if a positive test is found, the prescription will be sent to the pharmacy and filled and delivered to the patient's home. In addition, patients who utilize "Pharmacy in a Flash" will also receive a custom care package for the suspected illness and a video consultation with a pharmacist. Follow up communications will be conducted to assess resolution of the diagnosed condition as well as medication counseling as needed.

Preliminary Results: Results will address stated objectives. Conclusions/Implications: This project will demonstrate the utility of a novel point-of-care service. Additionally, it will open up opportunities to gain further insight into community needs and serve as a foundation on which future services can be built.

322-Exploring Complementary and Alternative Medicine (CAM) Use among Blacks for the Management of Hypertension. Williams L, Hawkins-Taylor C, Sarpong D, Xavier University of Louisiana, College of Pharmacy, Sheats J, Tulane University School of Public Health and Tropical Medicine, Sarac M, Faculty of Pharmacy Novi Sad, Business Academy University, Serbia, Europe. Email: llgeorge@xula.edu.

Objective: More than 30% of the population taking antihypertensive medications have uncontrolled blood pressure. Low patient adherence to hypertension medications have been associated with poor blood pressure control. More than 40% of adults use health care approaches outside of conventional medicine. Complementary and alternative medicine (CAM) use is prevalent among older men and women, particularly those with chronic conditions, including hypertension, diabetes and heart failure. Previous data showed an association between CAM use and low adherence among black men and women. Among black women, factors associated with CAM use were engaging in 2 or more lifestyle modifications and reducing medications due to cost and side effects. Among black men, factors associated with CAM use were not being married and having a high education or greater. Little is known about CAM use in relationship to hypertension management and medication adherence among adults. The objective of the study was to identify types and predictive factors of CAM use for the management of hypertension among black men and women aged 40 years and older.

Methods: Key informant interviews to guide development of focus group materials. The Focus Group Guide was informed by the Theory of Planned Behavior to elicit salient beliefs around participant's intentions, attitudes, beliefs, and actions with regard to hypertensive medication adherence and using CAM. Focus groups of 90 to 120 minutes were facilitated by a behavioral scientist and pharmacy faculty member to gather information about CAM use for the management of hypertension. Written consent and demographic data were obtained through a short survey and information form. Focus groups were audio recorded and transcribed verbatim. Each facilitator additionally took notes throughout sessions.

Preliminary Results: 62% (n=13) reported not talking to their healthcare provider about the use of herbal, drug or food supplements. 29% (n=6) reported talking to their pharmacist. The majority of participants did not have a blood pressure machine. Self-reported low adherence was reported among 62% (n=13) of participants. Most participants reported using CAM as a complement to their prescribed medications rather than a substitute. A majority of participants reported not being knowledgeable about hypertension. Disadvantages of Taking Blood Pressure medications as Prescribed included: suffering negative side effects such as weight gain, bloating, dizziness. Reasons for using CAM included: "more natural", "lack of trust of health care system", and "spiritual and cultural

influences."

Implications: Understanding the types and level of use of CAM by patients and also understanding where information about CAM is obtained by patients, allows pharmacists to take into consideration those preferences when counseling patients and developing patient care plans.

323-Exploring Factors of Complementary and Alternative Medicine (CAM) Use among Underserved Black Men and Women with Hypertension: a Pilot Study. Williams L, Hawkins-Taylor C, Xavier University of Louisiana, College of Pharmacy, Sarac M, Faculty of Pharmacy Novi Sad, Business Academy University, Serbia, Europe. Email: llgeorge@xula.edu.

Objective: Purpose: Despite the availability of low-cost, highly effective antihypertensive medications, Blacks in the United States have the highest prevalence of hypertension in the world. They are also more likely than whites to have lower adherence to antihypertensive medication; and relative to all other race/ethnicities, are more likely to develop complications from hypertension. Several clinical, sociodemographic, cultural and behavioral factors, including the use of complementary and alternative medicine (CAM), (i.e. health and wellness therapies that have typically not been part of conventional Western medicine), may contribute to low medication adherence and ultimately uncontrolled blood pressure and poorer health outcomes. CAM approaches, such as the use of natural products, mind/body practices, and naturopathy, may be used as an adjunct, or substitute to, conventional medicine. Preliminary data conducted by the primary investigator and colleagues identified an association between CAM use and low adherence to antihypertensive medications among older black adults, but not among whites. The purpose of this study is to identify socio-demographic, psychosocial, healthcare system and communication factors predictive of CAM use among hypertensive black men and women.

Methods: Participants have been recruited through one federally qualified health center (FQHC) in the greater New Orleans area. Institutional review board approval for the study has been obtained. Consent will be obtained from participants that meet eligibility. Eligibility criteria include men and women of African descent, aged 40 years of age and older, with established hypertension, use of prescribed antihypertensive medications and English speaking. Questions assessing psychosocial, healthcare system, CAM use and communication were derived from previously validated surveys. CAM use is defined as the use of health food and herbal supplements, and relaxation techniques at least several times or on a regular basis in the year prior to the baseline survey. Survey data will be summarized using descriptive statistics.

Preliminary Results: A total of 39 African American men and women completed the surveys to date. Fifty percent of the participants reported that they had a diagnosis of diabetes and 5.56% (n=2) reported having chronic kidney disease. Twenty-four participants (63.16%) reported that they monitor their blood pressure; however, greater than 50% stated that they did not own a blood pressure machine. In regards to knowledge of hypertension, 25.73% (n=11) and 67.57% (n=25) reported that they were very knowledgeable and somewhat knowledgeable regarding their blood pressure, respectively. Majority of the participants stated that they do not talk to their healthcare provider or pharmacist about the use of herbal, drug or food supplements.

Implications: This study aims to identify additional knowledge on the use of CAM, highlighting differences that may have been previously unnoticed in other analyses.

Pain Management

324-Alternative Pain Treatment: Outcomes Associated with Compounded Topical Medication in Community Pharmacy Patients. Ali A, Hightower B, Patel M, Rainey S, Young H, University of Georgia, Fleming M, UNT System College of Pharmacy. Email: asma.ali@uga.edu.

Objective: The objectives of this study were to 1) assess the use of compounded creams, and 2) examine the associations between compounded formulations and change in pain scores, perceived effectiveness, time until pain relief, and duration of effect in community pharmacy patients. The misuse of oral prescription opioid medications has led to increases in morbidity and mortality. In 2017, the US Department of Health and Human Services declared the opioid crisis a public health emergency. Strategies have been developed to combat this opioid crisis, including opioid prescribing guidelines, prescription drug monitoring programs (PDMPs), targeted naloxone distribution, and medication-assisted treatment. Given the magnitude of the opioid problem, there is a need to explore alternative strategies to treat pain. One plausible alternative is the use of compounded topical medications created to relieve pain. The purpose of this study was to examine outcomes associated with the use of compounded topical pain medications in community pharmacy.

Methods: A secondary data analysis was conducted using pharmacy prescription records for compounded creams and documentation of follow-up calls with patients who received creams. The data was obtained from an independent community pharmacy located in southeast Georgia. Six formulations of compounded creams were included in this study. The formulations contained a combination of non-steroidal anti-inflammatory medications, topical anesthetic medications, and/or antiepileptic medications. During the follow-up calls, patients were asked questions regarding the first use of the cream, site of application, frequency of use, time taken to apply the cream, perception of the cream's effectiveness, pain before and after applying the cream (scale of 0 to 10; 0 for no pain and 10 for severe pain), time to and duration of effect. Descriptive statistics were examined to characterize study variables. Bivariate (t-tests, Fisher's exact tests) and multivariable (linear regression) analyses were conducted to examine associations between 1) changes in

pain scores and 2) cream formulations and effectiveness, time until pain relief, and duration of effect. A p-value of < 0.05 was considered statistically significant. SAS software version 9.4 was used to analyze study data.

Results: A total of 105 patients were included in this study. Approximately 65% of patients applied the cream on lower extremities and/or the back. The mean pain score after applying the cream was significantly lower than the mean pain score before applying the cream (3.9 vs 7.9, p <0.01). No association was found between the specific cream formulations and the change in pain score. Results indicated an association between the cream formulations and the duration of effect (p=0.03). Post hoc analyses showed that Flurbiprofen 3.5%/Amitriptyline 0.5%/Gabapentin 1.0%/Lidocaine 2.25%/Prilocaine 2.25% formulation was associated with a longer period of pain relief than the Gabapentin 5.0%/Lidocaine 2.25%/Prilocaine 2.25% formulation (p=0.03).

Conclusions/Implications: Many community pharmacies across the nation have the capacity to compound topical medications to treat pain, which may decrease the use of oral opioid medications. Further studies are needed to evaluate the impact of these creams on oral opioid medication use and subsequent deleterious outcomes.

325-Evaluation of Pharmacists' Self-Efficacy in Combating the Opioid Epidemic and Identifying Opportunities for Maryland Pharmacists. Asamoa-Frimpong F, UMB School of Public Health, Hsu A, West Coast University. Email: frederick.frimpong@umaryland.edu.

Objective: The opioid epidemic has been a national public health crisis and pharmacists have not been fully integrated in combating this epidemic given their accessibility in the community. Objective: Evaluate pharmacists' self-efficacy based on the constructs of the social cognitive theory in identifying appropriate pain management therapies and recognizing abuse potential, counseling on the appropriateness and handling of opioid drugs, and responding to overdose using naloxone.

Methods: Cross-sectional study. A 30-questions survey was developed and administered electronically and in paper form to licensed pharmacists in Maryland. The final survey was administered to members of the Maryland Pharmacist Association, Maryland Pharmaceutical Society, and other network pharmacists. The study received IRB approval from the University of Maryland Eastern Shore. Descriptive analyses were conducted using SPSS Statistics Version 24.

Results: The response rate was approximately 18% (n=55). More than 50% (n=28) of pharmacists have not reviewed the current pain management guidelines of the CDC and APS. The degree of confidence for recommending opioid abuse treatment to the patient/provider/caregiver was 6.67 on a scale of 1 to 10 (SD = 2.5). Two-thirds (n=43) of pharmacists are willing to participate in CE on opioid abuse. Approximately 58% (n =32) of pharmacists in their current position have not received formal training in the management opioid misuse. The degree of confidence to counsel patients on the safe storage of opioids medications was 9.06 on a scale of 1 to 10 (SD= 1.68). The degree of confidence for pharmacists to administer naloxone was 7.51 (SD = 2.78).

Conclusions: Pharmacists could improve on self-efficacy and are willing to play greater roles in the opioid epidemic. There are gaps in training and resources that are needed to make pharmacists more equipped and to be more engaged in combating the opioid crisis.

326-Impact of Opioid Workflow on Patient Access to Naloxone and Morphine Milliequivalent-Prescribing Trends. Brown C, O'Connor S, Idaho State University, Shaver L, Idaho State University; Shaver Pharmacy and Compounding Center, Skoumal B, Shaver Pharmacy and Compounding Center. Email: browcait@isu.edu.

Objective: Take-home naloxone programs have been shown to decrease deaths due to opioid overdoses. Pharmacists in the community setting are positioned to make an impact on opioid safety through education and facilitation of naloxone access. Community pharmacy-based naloxone programs have been implemented with little disruption to the daily workflow but have not explored the impact of the protocol on number of naloxone prescriptions. A rural, independent community pharmacy that offers enhanced clinical services in addition to dispensing has developed an opioid protocol that is embedded within workflow and results in the pharmacist independently prescribing naloxone (permissible under Idaho law) where appropriate. The objectives of this study are to determine (1) the change in percentage of filled naloxone prescriptions after protocol rollout, (2) the percentage of naloxone prescribed by pharmacists versus physicians post-rollout, (3) the pharmacy employees' perception of the protocol, and (4) if there is a change in 30-day, per-patient average morphine milliequivalents (MMEs) prescribed by providers.

Methods: This retrospective cohort study will employ a patient chart review and an employee questionnaire. Patients with combined daily MME 50 will be included in the retrospective chart review. Pharmacy employees who have been continuously employed from May 1, 2019 to the date of questionnaire deployment will be included in the study. Employees hired after implementation of the opioid protocol (June 2019) or who left the pharmacy prior to questionnaire deployment will be excluded from the questionnaire. Baseline rates of patients with at-home naloxone, defined as filled prescriptions, between January 1, 2017 to December 31, 2019 will be determined using pharmacy dispensing reports. Reports will be run on the opioids dispensed from 1/1/19 to 9/30/19 to find the patient profiles that will be reviewed and the extracted data will be de-identified, coded, and compiled in a spreadsheet for analysis. The variables to be collected are: patient name, calculated average MME and range per month, insurance, copay, date of birth, age, gender, opioid (drug name, daily milligrams, MME, date dispensed), total daily MME, naloxone (declined, no documentation, on hold, dispensed, refusal reason, dosage form, prescriber), patient education method, return of naloxone disclaimer and time frame,

documentation faxed to physician, and time from date dispensed to date faxed (days). For workflow assessment, a questionnaire will be sent electronically to the pharmacy staff. The questionnaire has been created and reviewed for readability by a pharmacist cohort. The questionnaire will gather demographic information, collect feedback about the implementation of the protocol into workflow, and assess perception of the protocol and knowledge of naloxone. Patient data collected in the retrospective chart review will be deidentified in the spreadsheet and analyzed using X2 and the student's t-test. Quantitative data from the employee questionnaire will be assessed using descriptive statistics; free-text data will be assessed for themes.

Results: Pending.

Implications/Conclusions: Pending.

327-High Dose, High Risk–Pharmacist Intervention Targeting High-Dose, High-Risk Prescription Opioids in the Community Setting. Chang F, Chen M, School of Pharmacy, University of Waterloo, Kluz A, Huron Community Family Health Team. Email: feng.chang@uwaterloo.ca.

Objective: To examine the feasibility and effectiveness of a pharmacist intervention targeting high dose prescription opioids.

Design: a naturalistic mixed-method study consisting of retrospective chart review and semi-structured interviews. Participants: Community pharmacists in active practice within 200km of [city] were invited to participate. Intervention/Training: Pharmacists received training on screening incoming opioid prescriptions and flagging doses at or greater than 90 mg Morphine Equivalence Dose (MED) per day for consultation. During the consultation, the pharmacist could provide education and/or make additional recommendations as they see fit. The patient's prescriber was notified and patient chart flagged for follow-up. Pharmacists also received a toolkit with resources for managing high dose prescription opioids, and ongoing support for 8 months after the training. Data collection: At 8 months post-training, pharmacists who had implemented the intervention in their pharmacies were interviewed to understand their experience implementing the intervention; a retrospective chart review of pharmacists' documentation and medication refill history of patients they identified was conducted.

Data analysis: Mean and standard deviation were reported for continuous variables, and frequencies and proportion were reported for categorical variables. Mean change of MED was analyzed using paired t-test and median change of MED was analyzed with a nonparametric test (Wilcoxon Ranked Test); thematic analysis was used to analyze qualitative data collected from semi-structured interviews.

Results: A total of 18 pharmacists consented to the study, 13 pharmacists attended the training, 7 pharmacists implemented the intervention after the training, 6 pharmacists withdrew and 5 were lost to follow-up. A total of 35 patients taking high dose opioids were identified and approached by pharmacists in 8 months, the average age of these patients was about 55 (13.4), 60% were male, and taking an average opioids of 260.7mg MED with oxycodone ER (40%), hydromorphone ER (31.4%), and oxycodone/acetaminophen (28.6%) being the most commonly used opioids and antidepressants (60%) and anticonvulsants (22.8%) as commonly used non-opioid pain medications; 46% of patients were receptive to pharmacists' education/suggestions and willing to proceed with changes on their opioids; 24 faxes summarizing patient encounter for 24 patients were sent to patients' physicians and about 80% of the physicians either replied with faxes, calls, or new prescriptions; nine medication-related recommendations were made by pharmacists for 7 patients, six were accepted and implemented by physicians and 1 was modified and then implemented; compared with baseline, patients' mean MED dropped down significantly from 260.7 mg to 215.4 mg with a 17.4% decrease ($p=0.01$), and median MED decreased from 177.8 mg to 156.7 mg which represented a 11.9% reduction ($p=0.01$). All pharmacists reported that they modified the intervention process based on their practice environment; main barriers were time constraint, lack of support from pharmacy colleagues, and lack of incentives.

Implication/Conclusions: The study suggests that community pharmacists can reduce high opioid use by identifying and educating patients, and communicating/collaborating with patients' prescribers.

328 High Dose, High Risk–Training Pharmacists on an Intervention Targeting High Dose High Risk Prescription Opioids in the Community Setting.. Chang F, Chen M, Fonseca J, School of Pharmacy, University of Waterloo, Kluz A, Huron Community Family Health Team. Email: feng.chang@uwaterloo.ca.

Objective: To deliver and evaluate a training program for community pharmacists on an intervention targeting high dose prescription opioids.

Design: prospective observational study in a naturalistic setting. Participants: Community pharmacists in active practice within 200km of [city] were invited to participate. Training: Pharmacists received one day of training on screening incoming opioid prescriptions and flagging doses at or greater than 90 mg Morphine Equivalence Dose (MED) per day for consultation. During the consultation, the pharmacist could provide education and/or make additional recommendations as they see fit. Documentation sample for prescriber communication was provided. Additionally, pharmacists were updated on the 2017 Canadian Opioid Guideline for Chronic Non-Cancer Pain and motivational interviewing. Pharmacists also received a toolkit with resources for managing high dose prescription opioids, and ongoing support for 8 months after the training. Data collection: A pre-training survey was administered to capture participant

demographical information and baseline knowledge and confidence on high-dose prescription opioid management. A post-training survey was administered to collect feedback and satisfaction with the training program. An 8-month follow-up survey was administered to pharmacists to re-evaluate their knowledge and confidence on high-dose prescription opioid management, implementation in practice, and communications with patients and prescribers.

Results: Eighteen pharmacists consented to the study, 13 pharmacists attended training, 6 pharmacists withdrew and 5 were lost to follow-up. For evaluations, 16 pharmacists completed pre-training survey, 13 competed post-training survey, and 7 pharmacists completed the 8-month follow-up. About 50% of pharmacists were aged 46 or older with a majority (70%) being female, less experienced (62.6%) and practicing in urban settings (81.3%), either in a retail chain store (62.5%) or a banner store (18.8%); 75% of the pharmacies had a daily prescription volume above 100 and only half were staffed with 3 or more pharmacists. Compared with pre-training, pharmacists increased confidence at 8-month follow-up in calculating MED (37.6% VS 85.7%), monitoring effectiveness (12.6% vs 57.1%), recognizing when to recommend a change (18.8% vs 85.7%), managing risks (12.5% vs 57.1%), and communicating with prescribers (31.3% vs 100%). Most (92%) of the pharmacists who attended the training agreed that the training was relevant to their practice and over half (61.6%) said they learnt a lot or all new information from the training. Significant factors cited as barriers for participation included a lack of support from pharmacy colleagues, owners, managers or corporate management, and being unfamiliar with pharmacy practice research leading to misunderstanding of the expectations.

Implication/Conclusions: The study suggested that community pharmacists had gaps in knowledge and skills applicable to managing high dose prescription opioids, but can benefit from a brief but practical training program with tools and implementation support. Pharmacist participation in practice research related to opioid stewardship activities remains hindered by lack of infrastructural support and inexperience with research in the community setting.

330-Clinically Meaningful Results with a Non-Surgical Treatment Option for Osteoarthritis of the Knee using Topical Diclofenac Sodium 1%. Fudin J, Remitigate LLC, Bouisset F, Kenneally A, GlaxoSmithKline Consumer Healthcare. Email: jeff@paindr.com.

Objective: Osteoarthritis (OA) is the most common form of arthritis that also causes disability (1). Oral non-steroidal anti-inflammatory drugs (NSAIDs) are an acknowledged treatment for patients with knee OA, though are contraindicated in some patients (2,3). Diclofenac sodium gel 1% (DSG 1%), a non-opioid, topical NSAID, provided significantly better pain relief than vehicle alone for patients with knee OA in 3 clinical trials (2). A post-hoc meta-analysis of these trials was conducted to determine the percentage of patients achieving a minimal clinically important improvement (MCII) in pain and other symptoms of OA to gain insight into the clinical impact of the benefits of DSG 1% for patients. The MCII is defined as the smallest improvement in symptoms viewed as clinically meaningful for patients (4). Thus, the MCII represents an improvement of relevance in a clinical trial and the minimal meaningful change at an individual level.

Methods: All 3 studies pooled for this analysis were conducted in US centers, and were 12-week, prospective, randomized, double-blind, multi-center, parallel group studies with similar endpoints comparing DSG 1% with vehicle in subjects with knee OA (1). An MCII responder was defined as a patient who had an improvement of ≥20% relative to baseline in Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) pain, function, or stiffness or in pain on movement (POM), a definition consistent with the Osteoarthritis Research Society International (OARSI)-Outcome Measures in Rheumatology (OMERACT) responder criteria (5,6). The percentage of MCII responders was analyzed using the Cochran-Mantel-Haenszel test stratified by study. Time to MCII response was analyzed using the log-rank test stratified by study. Heterogeneity of treatment effect across studies was investigated using the Breslow-Day test.

Results: The pooled analysis included 719 DSG 1%-treated patients and 705 vehicle only-treated patients (ITT Efficacy population). By Week 1 there was a significant difference in the number of subjects reaching MCII for all endpoints (DSG 1% vs vehicle): WOMAC pain, 67.9% vs 57.2% (P<.0001); POM, 65.8% vs 51.6% (P<.0001); WOMAC function 58.3% vs 47.8% (P<.0001); WOMAC stiffness, 64.5% vs 53.3% (P<.0001). Time to first MCII was shorter with DSG 1% vs vehicle for all measures: WOMAC pain, mean 25.5 vs 32.2 days (P<.0001); POM, 26.6 vs 34.9 days (P<.0001); WOMAC function, 30.5 vs 38.8 days (P<.0001); WOMAC stiffness, 28.0 vs 35.2 days (P=.0001). Significant differences in the percentage of patients with an MCII between groups were still evident at Week 12 for all endpoints. No evidence of heterogeneity of treatment effect was found between studies, indicating the results from this meta-analysis were robust and reliable.

Conclusions: MCII signifies an improvement of relevance in a clinical trial. As applied to this meta-analysis, the majority of DSG 1%-treated patients achieved clinically meaningful relief from OA pain and other symptoms within 1 week. Responses sustained over 12 weeks further suggested the clinical relevance of the significant patient benefits observed in the original studies. Topical DSG 1%, which may limit systemic NSAID exposure, was also well tolerated in the original studies, providing patients with an alternative to oral NSAIDs.

331-Evaluation of Fixed-Dose Combinations of Ibuprofen and Acetaminophen in the Treatment of Postsurgical Dental Pain: A Pilot, Dose-Ranging Study. Kellstein D, Self-Employed, Levya R, Pfizer Consumer Healthcare. Email: david.kellstein@gmail.com.

Objective: Ibuprofen (IBU) and acetaminophen (APAP) provide analgesia via different mechanisms of action and do not exhibit drug-

drug interactions; therefore, combining low doses of each may provide greater efficacy without compromising safety. The present study assessed analgesic efficacy of fixed-dose combinations (FDCs) of ibuprofen/acetaminophen (IBU/APAP) compared with IBU 400 mg and placebo.

Methods: A 12-hour, double-blind, proof-of-concept study compared 3 FDCs of IBU/APAP (200 mg/500 mg, 250 mg/500 mg, and 300 mg/500 mg) with IBU 400 mg and placebo in patients with moderate-to-severe pain following third molar extraction. Primary endpoint was the time-weighted sum of pain relief and pain intensity difference scores from 0–8 hours after dosing (SPRID[4]0–8). Time to meaningful pain relief (TMPR), duration of pain relief, and adverse events (AEs) were also assessed.

Final Results: 394 patients were randomized. All active treatments were superior to placebo for SPRID[4]0–8 (all $P < 0.001$) but not significantly different from IBU 400 mg. Median TMPR with FDCs and IBU (44.5–54.1 and 56.2 minutes, respectively) was faster than with placebo (> 720 minutes; all $P < 0.001$ vs placebo). Duration of pain relief was similar with the FDCs and IBU 400 mg (9.7−11.1 hours) and significantly longer than with placebo (all $P < 0.001$). AE incidence was comparable with all treatments.

Implications/Conclusions: Each IBU/APAP FDC provided analgesic efficacy comparable to IBU 400 mg and superior to placebo. Each FDC provided MPR in < 1 hour, duration of pain relief > 9 hours, and tolerability similar to IBU and placebo.

332-An Evaluation of Acute Lower Back Pain Treatment in the Emergency Department. Nasserjah J, VCU School of Pharmacy. Email: nasserjahm@vcu.edu.

Objective: Per submission guidelines, the objective of this review will be to evaluate the appropriateness of acute lower back pain treatment in the ED by comparing current prescribing practices to best practices as outlined in guidelines and the medical literature. Lower back pain is the most common musculoskeletal-related disorder that results in emergency department (ED) visits and is one of the top patient complaints in emergency medicine. The etiology of most lower back pain presentations that are managed in the ED are acute, non-life-threatening, and not related to any serious underlying pathology, such as infections, tumors, or kidney stones, which would require immediate medical attention. The current guideline-based standard of therapy for lower back pain includes non-steroidal inflammatory drugs (NSAIDs) and acetaminophen. Avoidance of opioids as first line therapy is also recommended due to a high prevalence of adverse effects, including dependence and over use; however, they may be considered for management of acute severe pain or pain refractory to non-opioids. With respect to adjunctive therapies, muscle relaxants are not recommended for the initial treatment due to increased incidence of central nervous system side effects, while topical medications, such as lidocaine patches, have not demonstrated improvements in pain control when compared to oral NSAIDs alone. With respect to combination therapy, trials have failed to demonstrate benefit with the addition of medications, such as muscle relaxants and opioids, to an NSAID.

Methods: This study will be a retrospective chart review conducted at an 894-bed community teaching hospital. Adult patients presenting to the ED with a primary diagnosis code of lower back pain from February 1, 2019 -April 30, 2019 and have received at least one dose of medication for pain management during their visit will be included. Exclusion criteria include traumatic etiology of back pain, radicular back pain, and history of chronic back pain. In addition to evaluation of current prescribing practices, adverse effects, ED length of stay and ED return visits within 7 days will also be evaluated. Demographic data will be collected including sex, age, body mass index, acute or chronic lower back pain, previous ED visits for lower back pain, duration and etiology of back pain, outpatient opioid use (including specific opioids taken), other outpatient analgesic use, initial pain score, analgesic medication(s) administered in the ED, ED length of stay, ED readmissions, time to ED readmission (if applicable), naloxone administration, and adverse drug reactions. Data will be analyzed using descriptive statistics. Informed consent will not be obtained given the retrospective design of the study. In addition, no funding will be provided for the completion of this study.

Preliminary Results: One-hundred and twenty patients will be included in the analysis. Full results will be reported at the meeting.

Implications/Conclusions : This study will allow for a better understating of current lower back pain treatment for patients managed in the ED and identify areas of success and opportunities for improvement.

333-Evaluation of the Efficacy and Safety of Single and Multiple Doses of a Fixed-Dose Combination of Ibuprofen and Acetaminophen: Results From Two Phase 3, Randomized, Parallel-Group, Double-Blind, Placebo-Controlled Studies. Searle S, PRA Health Sciences, Muse D, Jean Brown Research, Inc, Leyva R, DePadova E, Pfizer Consumer Healthcare, Cruz-Rivera M, Sanofi, Kellstein D, Paluch E, Self-Employed. Email: SearleShawn@prahs.com.

Objective: The objective of the present studies was to assess the analgesic efficacy and safety of single or multiple doses of a fixed-dose combination (FDC) of ibuprofen (IBU)/acetaminophen (APAP). A previous pilot study demonstrated that 3 different FDCs of IBU and APAP provide analgesic efficacy comparable to a higher dose of IBU with the same safety profile.

Methods: Two phase 3 studies of FDC IBU/APAP 250 mg/500 mg in dental pain were performed; both adhered to all ethical requirements as specified by Good Clinical Practice regulations. Both enrolled young, healthy subjects with at least moderate pain after ≥3 third molar extractions. In study 1, subjects received single-dose FDC, IBU 250 mg, APAP 650 mg, or placebo with pain evaluations for 12 hours. In study 2, subjects received multiple-dose FDC or placebo every 8 hours with pain evaluations over 48 hours. Time-weighted sum of pain intensity differences over 8 (SPID[11]0–8) and 24 (SPID[11]0–24) hours were the primary outcomes, respectively. Time to meaningful pain relief (TMPR), duration of pain relief, and tolerability (adverse events) were assessed.

Final Results: 568 and 123 subjects were randomized in Studies 1 and 2, respectively. In Study 1, SPID[11]0–8 favored FDC significantly over placebo, IBU, and APAP (P<.001, P=.008, and P<.001, respectively). In Study 2, SPID[11]0–24 favored FDC significantly over placebo (P<.001). TMPR occurred in <1 hour and duration of pain relief was >8 hours in both studies. FDC was well tolerated.

Implications/Conclusions: FDC IBU/APAP 250 mg/500 mg provides superior analgesia to individual monocomponents, a rapid onset of action, sustained analgesia over 8 hours, is well tolerated, and may provide a new non-opioid treatment option for acute pain.

334-Pharmacokinetics of a Fixed-Dose Combination of Ibuprofen and Acetaminophen in Healthy Adult and Adolescent Populations. Tarabar S, Pfizer New Haven Clinical Research Unit, Kelsh D, Vince B, Altasciences/Vince and Associates Clinical Research, Leyva R, Pfizer Consumer Healthcare, Song D, Pfizer Inc., Matschke K, Pfizer Inc, Kellstein D, Meeves S, Self-Employed, Cruz-Rivera M, Sanofi Consumer Health Care. Email: sanela.tarabar@pfizer.com.

Objective:: The objectives of the 3 studies reported herein were to determine the relative bioavailability of a new ibuprofen/acetaminophen fixed-dose combination (FDC) compared with its individual monocomponents administered together or separately in adults, to evaluate the effects of food on the FDC in adults, and to determine drug exposure from the FDC in adolescents. Ibuprofen and acetaminophen are effective over-the-counter analgesics/antipyretics that exert their effects via different mechanisms of action. An FDC containing 250 mg ibuprofen and 500 mg acetaminophen (administered as 2 x 125 mg ibuprofen/250 mg acetaminophen) has been developed that provides greater analgesic efficacy than the same doses of either agent alone without increasing the risk for adverse events.

Methods: Two studies (Studies 1 and 2) conducted in healthy adults aged 18–55 years used a crossover design in which subjects received a single dose of each treatment with a 2-day washout period between each. Pharmacokinetic (PK) comparisons in Studies 1 and 2 were determined by constructing 90% confidence intervals around the estimated difference between test and reference treatments using a mixed-effects model based on natural log-transformed data. Because the monocomponent doses in Study 1 were different from those of the FDC, PK parameters were dose normalized to ibuprofen 250 mg and acetaminophen 500 mg for the purposes of this comparison. In Study 3, the bioavailability of ibuprofen and acetaminophen from a single oral dose of the FDC was assessed in healthy adolescents aged 12–17 years. No formal statistical analyses were planned for this study.

Final Results: A total of 35 and 46 subjects were enrolled in Studies 1 and 2, respectively, and 21 in Study 3. Ibuprofen and acetaminophen in the FDC were bioequivalent to the monocomponents given alone or together. Food reduced the maximum concentration (Cmax) for ibuprofen and acetaminophen by 36% and 37%, respectively, and time to Cmax (i.e., Tmax) was slightly delayed. Overall drug exposure (area under the curve [AUC]) to ibuprofen or acetaminophen in the fed versus fasted state was bioequivalent. In adolescents overall, exposure to ibuprofen and acetaminophen was comparable to that in adults, with a slightly higher overall exposure to ibuprofen. Exposure to acetaminophen and ibuprofen in adolescents aged 12–14 years was slightly higher versus those aged 15–17 years. Adverse events were similar across all treatment groups.

Implications/Conclusions: The FDC ibuprofen/acetaminophen 250 mg/500 mg has a PK profile that is similar to its monocomponent constituents when given alone or together, indicating no drug-drug interactions and no formulation effects. Similar to previous findings for the individual components, the rate of absorption of ibuprofen and acetaminophen was slightly delayed in the presence of food. Exposure to ibuprofen and acetaminophen in adolescents was similar to that in adults, supporting the same dosing in that population. The FDC was well tolerated.

335-The Impact of a Motivational Interviewing-Based Approach Integrated with Unique Patient Engagement Technology on Chronic Pain Management in a Federally-Qualified Health Center. Wicker E, Chen A, Wandling E, Gardner J, Sweeney M, Grauer P, Cedarville University. Email: ewicker217@cedarville.edu.

Objective: To determine the impact of a motivational interviewing (MI)-based approach integrated with unique patient engagement technology on opioid prescribing practices before and after the intervention. Secondary objectives included determining: (1) changes in provider pain management knowledge, confidence in MI principles, and satisfaction with patient encounters and (2) patient goal-setting and functioning.

Methods: An IRB-approved, pre-post intervention study design with a retrospective comparison was utilized at a federally qualified health center (FQHC) in a region known nationally for high rates of opioid overdoses. To address the primary outcome of clinic-wide changes in prescribing, opioid prescribing data were collected from the electronic health record 1-year pre and post-intervention. For the provider component of the intervention, 11 providers (3 physicians, 7 nurse practitioners) were educated on guideline-based opioid best practices and MI skills through 4 accredited CE, active learning sessions to improve skills and provider-patient engagement. They completed pre-education, post-education, and end-of-study assessments on opioid knowledge and MI confidence. Post-sessions, providers were asked to apply these skills in all patient encounters, including setting goals for therapy. For the patient intervention, a subset of chronic pain patients were recruited to participate in MI phone calls with student pharmacists bi-weekly for 12 weeks. Patients were also given access to the InXite Chronic Care Management Platform, an online portal that allows patients and their healthcare team to view and interact about their care; this was used to document and track goals. Patients completed the Pain Treatment Satisfaction Scale and the West Haven-Yale Multidimensional Pain Inventory at baseline and 3-months to assess their perceptions of pain and physical functioning. Data from surveys and prescription reports were analyzed (IBM SPSS v.24.0) using descriptive statistics, and within-group changes were analyzed using a Wilcoxon or Friedman's test, as appropriate.

Results: For the primary outcome, 569 opioid prescriptions were written pre-intervention, decreasing to 368 post-intervention, The average morphine equivalent dose per prescription decreased from 26.83 pre-intervention to 26.42 post-intervention. Conversely, the number of naloxone prescriptions increased from 18 pre-intervention to 269 post-intervention. In the provider arm, three MI confidence items significantly increased between pre-/post-education with a sustained increase at the end of the intervention. In the patient-arm (N=43), few patients completed all assessments due to no-shows and phone challenges; accordingly, surveys were not analyzed. However, patient goals were recorded. Patient goals included diet (16), increased exercise and mobility (18), and smoking cessation (3).

Implications/Conclusions: Through an MI intervention, this study sought to improve the quality of pain management at the clinic. The decrease in opioid prescribing rates and increase in naloxone prescriptions exhibit a greater alignment with current guidelines. Prescribers also gained confidence in MI skills for better patient engagement in care. In addition, patients being treated for chronic pain were able to set and achieve goals. The opioid epidemic is a multifaceted problem that cannot be addressed with one simple intervention, but a provider training with pharmacist support demonstrated a potential beneficial intervention.

Patient Attitudes and Behavior

336-The Use and Awareness of Antihistamines and Melatonin in Controlling Insomnia Among Female College Students in Saudi Arabia. Alharbi M, Alsubaie H, Princess Nourah Bint Abdulrahman University, Alshehri A, Prince Sattam Bin Abdulaziz University. Email: phd.mashail@hotmail.com.

Objective: The main objective is to describe female students' sleep quality and use and misuse of sleep aid medications. The secondary objective is to identify which factors that may affect their medication safety awareness level.

Methods: An anonymous self-administered survey in English and Arabic was administered to female students in Saudi universities. The survey included the following four sections: students' perceived health and sleep quality, medication usage and misusage, medication safety awareness level, and sociodemographics. Students' health and sleep quality section included questions to identify students' level of perceived health and sleep quality (1 = poor, 5 = excellent), and sleeping hours, time of going to sleep, and difficulties. The second section included questions to identify the type of sleep aid medications used, and whether the students misused the medications or used them without healthcare providers' approval. The third section included 10 items on a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree) to measure students' medication safety awareness level. Lastly, the fourth section identified students' sociodemographic characteristics. In analyzing the data, descriptive, bivariate analysis and multivariate logistic regression were employed.

Results: A total of 113 participants completed the survey. Students average age was 21.6±2.2 years, their average perceived health was 3.5±0.9, their perceived sleep quality was 2.9±1.2, 30% slept during their nighttime, and 87.6% had sleeping difficulties. Of the participants, 65 (58%) had at least one type of diagnosed disease, and 8 students (7%) had been diagnosed with a sleep disorder. Among all the participants, 97 (86%) used sleep aid medications, and of which, 22% used only an antihistamine, 74% used a combination of paracetamol (acetaminophen) and antihistamine, 80% used them without healthcare providers' approval, and 64% misused them. Students' sleep aid medication safety awareness level was 3.8±0.7, which means the students were unsure about or unaware of the risk of the medications. The chi-square test showed a significate relationship between sleep awareness category (strongly agree and agree vs. unsure – strongly disagree) and students' general health category (excellent – good vs. fair and poor) ($\chi^2 = 4.74$, $p = 0.03$), sleep average hour category (> = 7 vs. <7) ($\chi^2 = 5.16$, $p = 0.02$), and exercise category ($\chi^2 = 7.71$, $p = 0.01$) (excellent – good vs. fair and poor). The independent-samples t-test showed that participants who had low sleep awareness were older (22.1±2.6 vs 21.1±1.7) and had a higher Body Mass Index (19.0±4.3 vs 17.3±3.2) when compared to student who had high sleep awareness. However, the multivariate logistic regression showed that only students' average hours of sleep had a significant relationship with their medication safety awareness level (Wald chi-square = 5.0, $p = 0.025$).

Conclusions: Students may have exams and other duties that disturb their sleep patterns and impact their medication awareness levels. Encouraging students to obtain enough sleep may improve their sleep quality and help them avoid using sleep aid medications.

337-Building a Patient-Centered Weight Management Program: Patients' information Needs and Ideas for Program Structure. Arnold A, Holmes E, Rosenthal M, University of Mississippi. Email: adarnol1@go.olemiss.edu.

Objective: Achieving and maintaining weight loss for large segments of the population remains elusive, despite evidence demonstrating the value of many weight management programs. This study aimed to gather patients' perceptions on weight management education needs, and ideas for the structure of a weight management program to be delivered in community pharmacies.

Methods: This was a mixed methods study combining qualitative focus group interviews with a cross-sectional survey. Three focus group interviews were conducted, along with a brief survey based on focus groups findings and sent to all eligible participants. The survey allowed for individual responses on the program components, and to validate focus group findings.

Results: Nearly half of respondents (45.9%) wanted further education on limiting carbohydrate and sugar intake. Participants were most interested in identifying different exercises appropriate for those with physical limitations (48.6%). A majority of participants preferred 1-hour meetings (70.3%) that contain a mix of one-on-one and group meeting formats (67.6%).

Conclusion: The results of the study suggest a three-month weight management program with a combination of group and individual in-person meetings occurring twice per month would be of most interest to patients.

338-What are Pet Owners' Perceptions, Awareness and Satisfaction with the Pharmacist's Role in Counseling and the Dispensing of Medications for Pets? Baker A, Willis R, Albertsons. Email: baker7anna@gmail.com.

Objective: What are pet owners' perceptions, awareness and satisfaction with the pharmacist's role in counseling and the dispensing of medications for pets? Study Objectives: The primary objective of this study is to assess pet owners' perceptions and expectations of pharmacists' roles in dispensing medications for pets at the community pharmacy. Background information: There is a recent trend suggesting an increase in pet ownership among US households. According to the American Veterinary Medical Association (AVMA) 2012 Pet Ownership Statistics, 36.5% of the US households own a dog and 30.4% own a cat. Community pharmacist's role goes beyond helping their human counterparts and includes helping pets who are owned by their patients. Even though pharmacists dispense human medications to pet owners, the available pet meds services at the community pharmacy are limited. In order to expand pet med services, we need to understand the pet owner's perception and expectations of the pharmacist's role within the community pharmacy setting. This study plans to fill this gap in knowledge by providing information on patients views and expectations of community pharmacists involved in veterinary care.

Methods: The research design is descriptive, prospective, survey-based study. Data collection will occur during October 2019 to January 2020. Two community pharmacies will be recruiting voluntary participants. The community pharmacy sites will be located in Denver and Aurora, CO. A cross-sectional, anonymous survey will be created to assess the study objective. The survey will include three sections with a variety of questions (multiple choice, Likert scale, open-ended). The first section will assess pet owner's general demographic information, including age, gender, and race/ethnicity. This section will contain anonymous open-ended questions. The second section will inquire about pet owner's experience with pet medication services available at the community pharmacy. This part of the survey will contain open-ended as well as multiple choice questions. The last section will assess pet owners' overall attitudes and satisfaction with community pharmacists involved in veterinary care. A 5-point Likert scale (strongly agree, agree, neutral, disagree, strongly disagree) will be used to measure the extent in which pet owners agreed with statements related to the different community pharmacist roles and responsibilities. The survey will be distributed to patients filling prescriptions at that community site and willing to participate in the research. The anonymous surveys will be printed out and placed at the Drop-Off and Pick-Up windows. Pharmacist and pharmacy technicians at both locations will be trained on the purpose of the research and procedures of survey allocation and collection. Pet owners' responses will be input manually and tracked using a Microsoft Excel spreadsheet. The study population inclusion criteria will be all Safeway pharmacy patients older than 18 that consent to voluntarily participate in the survey. Exclusion criteria will be patients that don't have any pets, those under the age of 18, and those who decline to consent or voluntarily participate.

339-Measuring Patient Voice on the Quality of Community Pharmacy Services. Carpenter D, Roberts C, University of North Carolina at Chapel Hill, Farley J, University of Minnesota. Email: dmcarpenter@unc.edu.

Objective: Our objective was to develop and assess the reliability and validity of a brief patient-reported measure to assess the quality of community pharmacy services. Measuring patients' perspectives on health service quality will continue to grow in importance given the U.S. health care system's emphasis on incorporating patient-reported metrics in value-based payment models.

Methods: Our study included two phases. During phase 1, we performed cognitive interviews with 10 patients to better understand whether a previously developed measure adequately captured patient satisfaction with pharmacy services, including enhanced services. Using feedback from Phase 1, we made significant revisions to the survey. During Phase 2, a convenience sample of 400 English-speaking adult patients with chronic health conditions completed an online survey, which included the revised 7-item satisfaction scale. Participants were recruited from a Qualtrics panel. Eligible patients filled their prescriptions at a community pharmacy at least once every two months and managed their own medications. Data were analyzed in SPSS. An exploratory factor analysis was performed to determine the number of factors underlying the satisfaction scale. Construct validity was assessed by examining associations between the satisfaction scale and demographic characteristics and a pharmacy quality item. Internal consistency reliability was assessed with Cronbach's alpha.

Results: During Phase 1, we discovered that patients responded to satisfaction items based on their gist perceptions of their pharmacy, which led to ceiling effects that made it difficult to differentiate between high and low-performing pharmacies. We also found that people had limited expectations regarding the role of their pharmacists in helping them stay healthy and feel more confident in using their medications. During Phase 2, it took participants an average of ~3.5 minutes to complete the revised 14-item survey. Eigenvalues and scree plots suggested a 1-factor solution, with this factor explaining 63.3% of the variance in satisfaction items. Cronbach's alpha for the 7-item pharmacy satisfaction scale was excellent (alpha = 0.90). Pharmacy satisfaction scores were strongly correlated with the quality of pharmacy services item (Pearson $r=0.73$, $p<0.001$); those individuals with higher satisfaction scores rated the quality of their pharmacy's services higher. One-way ANOVA revealed a significant difference in pharmacy satisfaction by length of time the individual had been going to their current pharmacy ($F(6,393)= 3.16$, $p= 0.005$). Post hoc comparisons indicated that the mean satisfaction score for those who had gone to their pharmacy for 7-11 months ($M=3.66$) was significantly lower than for those who had been going to their pharmacy for five or more years ($M=4.22$).

Implications/Conclusions: The revised satisfaction scale demonstrated good reliability and validity. Importantly, it was able to differentiate patients based on their perceptions of pharmacy quality. It also demonstrated that patients with higher satisfaction scores have been with their pharmacy longer. The scale could be used to quickly assess overall satisfaction with the quality of community pharmacy services.

340-Impact of a Pharmacy Navigator on Patient Experience in a Community Pharmacy. Cope D, Luebchow A, Schomberg R, Gullett V, Bricker K, Thomas L, Wake Forest Baptist Health. Email: darcope@wakehealth.edu

Objective: The primary objective of this study is to identify the impact on patient experience by placing a designated staff member in the pharmacy waiting area to triage patients as they enter a community pharmacy. In community pharmacy, patient experience is often driven by the efficiency of prescription processing and patient interactions with pharmacy staff. Common patient complaints include having to wait longer than told and a lack of communication from pharmacy staff. Although improving patient experience is a common goal, there were no studies identified that have placed a pharmacy staff member in the waiting area to proactively address customer concerns before they reach the point-of-sale.

Methods: This is a quasi-experimental, single-site, non-randomized interventional study that will be conducted in two 6-week blocks (pre-and post-implementation) to assess the impact of stationing a pharmacy technician, known as the pharmacy navigator, in the waiting area to triage arriving patients. The study will occur during peak transaction times, 11am to 5pm, Monday through Friday from October 2019 through January 2020. During the pre-intervention phase, point-of-sale disruptions will be recorded using the point-of-sale disruption tracker. This same tracker will be used to during the post-implementation phase to record disruptions identified by the navigator as well as those that reach the point-of-sale. Patient experience will be measured through the net promoter score, a one question survey available to all patients on a kiosk as they exit the pharmacy. Net promoter scores will be collected during the hours the navigator is active and compared to the same time period during the pre-implementation phase. The pharmacy navigator will be responsible for directing patients to the appropriate pharmacy area, resolving disruptions before they reach the point-of-sale, and providing updates of prescription status. The navigator will have access to the pharmacy management system and the ability to communicate with pharmacists inside the pharmacy through instant messaging to relay patient needs.

Results: Research in progress.

Implications/Conclusions: This study will highlight the opportunities to influence patient experience by improving the prescription pick-up process and providing better patient access to pharmacy staff. The results of this study may be applicable to any community pharmacy looking to improve patient experience.

341-A Qualitative Study of Medicare Plan Selection Decisions: Rationality or Bounded Rationality? Diggs K, Zhao Y, Westrick S, Auburn University Harrison School of Pharmacy, Chen Z, Western New England University. Email: kdd0026@tigermail.auburn.edu.

Objective: Medicare insurance plans provide medical and prescription benefits to over 64 million people. Medicare beneficiaries can choose among various options including the Original Medicare, Medicare Advantage plans, Medigap plans, and Medicare Prescription drug plans. Because plan coverage and their needs may change from year to year, it is important for beneficiaries to evaluate their choices annually. This requires Medicare beneficiaries to assess multiple factors, including pharmacy/hospital/medical access, plan restrictions, premium, out-of-pocket payments and additional features including vision and dental benefits. Given limited literature regarding how Medicare beneficiaries select their plan, this qualitative study's objectives are to identify factors influencing how beneficiaries select a plan and describe their decision-making process.

Methods: A semi-structured in-person or telephone interviews with Alabama residents who have Medicare as their sole insurance provider were conducted in Summer of 2019. Caregivers of eligible Medicare beneficiaries were eligible if they made decisions on the beneficiary's behalf. Interviews took 24 minutes on average. Interview questions elicited participants' perceptions of factors they considered when selecting a plan, their priorities, and trade-offs. The participants' interviews were conducted until the point of saturation was reached. All interviews were audio-recorded and transcribed verbatim. Transcripts were analyzed using thematic analysis with a process of qualitative inductive coding using Atlas.ti software. Two investigators coded transcripts independently and reached inter-coder agreement (Krippendorff's coefficient) of 0.76. Third investigator was included to help refine final codes and themes.

Results: Twenty participants were interviewed, resulting in 211 pages, 63,415 words of transcripts, and 477 minutes of interviews. The average age of participants was 69.20 years (SD=7.12). The majority of participants were white (80%), lived in urban areas (65%), and had monthly household income of $2,500 or less (55%). After several rounds of coding, 27 codes were identified and categorized into 6 themes including: plan characteristics, decision making process, knowledge, personal characteristics, environment and experience. When making a plan selection decision, participants assessed plan characteristics including cost, coverage and doctor access. Predisposing factors including participants' knowledge, experience, and characteristics including health status all influenced the plan selection decisions. Participants' environment also influenced their choices and the final plan selection. Lastly, participants utilized the real world practical decision-making process to simplify their choices such as using only one attribute as the criteria when selecting the plan, staying with the status quo, and conducting satisficing (limited) search for alternatives.

Conclusions: We create the conceptual model that includes plan characteristics, knowledge, experience, personal characteristics and

environment as factors influencing decision making among Medicare beneficiaries. We found that the decision-making process among Medicare beneficiaries is consistent with the bounded rationality model. That is, rationality of individuals is limited by unknown future health status, ambiguous information, too many plan choices, and cognitive limitations. This study generates a better understanding of key factors influencing Medicare beneficiaries' decisions and the shortcuts they used to simplify their decision making process. These findings will help researchers and community agencies design decision-making tools to help Medicare beneficiaries make rational decisions when selecting their Medicare plan.

342-Evaluation of an Interprofessional Health Education Program on Formerly Incarcerated Individuals' Trust in the Healthcare System. Donadio N, Mesa D, Mathew B, Volino L, Rutgers University. Email: nicole.donadio@rutgers.edu.

Objective: The objective of this study is to evaluate the impact of an interprofessional health education program on formerly incarcerated individuals' trust in the healthcare system and subsequent potential health-related behavioral changes. It is well-documented that people with histories of incarceration face unique barriers to healthcare access. However, mistrust in the healthcare system experienced by such individuals is an important factor for which there is a relative lack of research. Tools such as the Group-Based Medical Mistrust Scale (GBMMS) have previously been adapted to evaluate medical mistrust among formerly incarcerated individuals. Despite any efforts, continuing healthcare outside of the criminal justice system is unlikely if there is lingering mistrust in the system. This is a pressing issue considering the disproportionately high incidence of chronic conditions in this population. Non-profit agencies are working to assist people with histories of incarceration (clients) by providing individualized assessments and treatment plans to address fundamental needs, including access to medical care and health insurance. Currently, one such organization provides a 5-day reentry program designed to educate clients and remove barriers to employment. Over the past year, this reentry organization has collaborated with a pharmacy and medical school to educate clients on chronic conditions (cholesterol, diabetes, and hypertension) and sexual health. Two student pairs, each consisting of third or fourth professional year student pharmacists (P3/P4) and student physicians (M3/M4), will collaborate and present on one of two topics weekly to approximately five clients.

Methods: A previously modified and evaluated GBMMS will be used to assess clients' trust of the healthcare system before and after established interprofessional health education presentations given by P3/P4 and M3/M4 students. Each client will receive two educational sessions consisting of an approximately 45-minute education program followed by a 10-to 15-minute question and answer session. Additionally, self-reported potential for behavioral change resulting from the program will be assessed. Clients will anonymously complete paper-based surveys including the GBMMS before the first session (pre), after the first session on sexual health (post-1), and after the second session on chronic conditions (post-2). In addition, post-1 and post-2 surveys will assess clients' self-reported potential health-related behavioral changes as a result of the program. Pre, post-1, and post-2 surveys will be distributed to clients at each occurrence. Anonymous and randomized numbers will correlate pre-, post-1, and post-2 surveys in order to accurately gather and analyze pre-and post-surveys for each individual. It is expected that approximately sixty participants will be enrolled in this study. Changes in GBMMS responses and self-reported behaviors will be analyzed using descriptive statistics.

Results: Results are pending.

Conclusions: This study will evaluate the impact of interprofessional health education and interaction on formerly incarcerated individuals' trust in the healthcare system, as well as subsequent potential health-related behavioral changes. It is anticipated that interprofessional education and interaction will positively influence trust in the healthcare system and health-related behavioral changes.

343-Patients' Perceived Knowledge and Actual Knowledge of the Management of Adverse Events Related to Anticoagulant Therapy. Faile M, Lynch C, Ware K, South University School of Pharmacy. Email: mfaile07@gmail.com.

Objective: The purpose of this study was to identify perception and knowledge deficits which may place patients at an increased risk for adverse events and to identify patient populations that may need additional educational interventions related to anticoagulants. The study aims to compare patients' perception(s) of their level of understanding of their anticoagulant medications to their knowledge evaluated by a structured assessment. Demographic and adherence factors have the potential to assist pharmacist in the identification of patients at risk for adverse events from anticoagulant therapy.

Methods: The institutional review board approved this cross-sectional, dual location, survey study. Patients picking up a prescription for warfarin, apixaban, or rivaroxaban in either of two independently owned community pharmacies were included in this study. Patients were pre-selected for inclusion in the study based on medication refill history or recruited upon presentation of a new prescription. Patients were contacted by telephone prior to pick up of medication, and interest in participation was assessed after an explanation was provided. After obtaining informed consent, patients completed a written survey with a Flesch-Kincaid Grade Level of 7.2 at the time of pick-up of their anticoagulant. The pharmacist reviewed the responses and provided education on the anticoagulant medication. Multiple linear regression analyses assessed the impact of independent variables, demographic and adherence factors, on dependent variables, perceived knowledge and actual knowledge. Responses to two, 10-question survey items, scored on a percent grading scale, determined perceived and actual knowledge. Demographic factors included age, gender, location of pharmacy service, and ethnicity. Adherence factors included living situation, ability to manage medications independently, feelings of safety about medications, and education received about blood thinner medications. Statistical significance was associated with $p < .05$. Results:

Thirty customers, 15 from each pharmacy location, participated in this study. Perceived knowledge scores ranged from 20% to 100%. The average perceived knowledge score was 75%. Actual knowledge scores ranged from 30% to 100%. The average actual knowledge score was 71%. None of the indicated adherence factors, living situation (p=.922), manage own medications (p=.467), feeling safe taking medications (p=.954), or education about blood thinner medication (p=.427) statistically significantly predicted perceived knowledge scores. None of these same indicated adherence factors, living situation (p=.806), manage own medications (p=.270), perceived safety (p=.984), or education about blood thinner medication (.293) statistically significantly predicted actual knowledge scores. None of the indicated demographic factors, age (p=.789), pharmacy location (p=.458), gender (p=.263), and ethnicity (p=.105) predicted perceived knowledge scores. Two of these same demographic factors, age (p=.016) and gender (p=.031), did statistically significantly predict actual knowledge scores, whereas the other two factors, pharmacy location (p=.934) and ethnicity (p=.110) did not.

Conclusion/Implications: Demographic factors of age and gender were shown to be predictive of actual patient knowledge of their anticoagulant medications. As patients age, comorbidities may increase, and mental faculties tend to decline. Males or females may respond differently to side effects and risks of medications. The identification of predictive indicators could help community pharmacists identify patients at higher risk of adverse events related to anticoagulant therapy.

344-Are They Aware, Are They Ready? Assessing Community Pharmacy Patient's Awareness and Willingness to Utilize Pharmacist Provided Care. Garling K, Doan T, Sigala M, Cho S, Nguyen K, The University of Texas at Austin College of Pharmacy. Email: a.garling@austin.utexas.edu.

Objective: The objective of this national study is to evaluate the public's readiness to receive and pay for advanced clinical services offered by pharmacists. Pharmacists' roles are expanding in response to a shortage in healthcare access, an anticipated shortage of primary care physicians, and a continually growing patient population. Across the nation, pharmacy organizations are strategizing to transform the model of care within the pharmacy sector. With scope of practice expansion for pharmacists, many pharmacies are moving beyond filling prescriptions towards more longitudinal patient care models including clinical services and pharmacist prescriptive authority. Pharmacists in these settings will focus on various aspects of health management including disease prevention, prescribing, follow up, and monitoring. In order to ensure the successful implementation of these innovative models, research is needed to determine patients' awareness and receptiveness of the expansion of pharmacy clinical services.

Methods: A convergent mixed methods study design will be used to conduct this research. First, a cross-sectional survey of participants residing in Texas, Oregon, Washington, Georgia, Wisconsin, and New York will be conducted to assess patients' attitudes, knowledge, and beliefs about pharmacy practice and advanced clinical services. Participants will be excluded if they are less than 18 years of age, are licensed pharmacists or have family members who are licensed pharmacists. Surveys will be conducted in a grocery store pharmacy, chain pharmacy, multi-depot pharmacy, and independent pharmacy within each location. Research assistants will use an electronic Qualtrics survey to collect information from participants. Standardized survey procedures will be utilized to minimize systematic error in sampling. Second, focus group interviews will be conducted in each location. A semi-structured interview guide will be used to explore participants' perceptions of pharmacy services. The same exclusion criteria described above will be used in the focus group interviews. Descriptive and multivariable statistical analyses will be used to analyze quantitative data. Thematic analysis will be used to analyze qualitative data.

Preliminary Results: Studies have previously analyzed patient attitudes toward expanded pharmacist services, and the aim of the current research is to determine patients' awareness on a larger national scale. A total of six colleges of pharmacies are involved in this study and census data has been extracted from each location where data collection will occur. The median household income ranges from $39,714 to $67,755 with Athens, Georgia being the lowest and Austin, Texas being the highest. The majority race of those residing in Austin (Texas), Portland (Oregon), Spokane (Washington), Athens (Georgia), and Madison (Wisconsin) is White, while the majority of residents in Queens (New York) is reported to be Hispanic. The median age ranges from 28.1 to 38.7 years, and the sex is approximately half male and half female across the six regions.

345-Older Adults' Perceived Barriers to Participating in Community-Based fall Prevention Programs. Hohmann N, Qian J, Westrick S, Garza K, Auburn University, Hunt C, Auburn University School of Nursing, Hincapie A, University of Cincinnati. Email: nsh0010@auburn.edu.

Objective: Falls are the leading cause of injury-related death and non-fatal injuries in US older adults. Current evidence-based fall-prevention programs exist in community settings, but are under-utilized. The purpose of this study was to describe older adults' perceived barriers to participating in community-based fall prevention (CFP) programs.

Methods: We surveyed older adults (>65 years) to investigate perceived participation barriers. Recruitment used a national online Qualtrics Panel. Adults able to read/write in the English language were eligible to participate if they self-identified as being at least 65 years old; living on their own or with friends/family/spouse in their own home or apartment; and were at risk for falling according to CDC STEADI criteria: 1) Have you fallen in the past year? 2) Do you feel unsteady when standing or walking? or 3) Do you worry about falling? External validity was increased via Qualtrics recruitment quotas based on U.S. Census demographics for adults 65+ to recruit a nationally representative sample. The survey collected demographics, fall history, and previous experience with exercise or CFP programs; a 10-item physical functional status scale via the SF-36 physical functional status domain; and ten 6-point Likert-type items

exploring perceived barriers to participation in CFP programs (where 1=Strongly Disagree and 6=Strongly Agree). Following pilot-testing, the final survey instrument was launched. To ensure that only respondents who thoughtfully answered questions were included in results, Qualtrics excluded respondents who completed the survey in less than one-third the median pilot-test completion time. Response rate was increased through email reminders and incentives administered by Qualtrics. Data were analyzed using descriptive statistics, including means, frequencies, percentages, and standard deviations.

Results: A total of 630 older adults completed the survey. Participants' mean age was 70.5 years, 56% were female, 86% self-identified as White and 9% as Black/African-American, and 31% had an annual household income of less than $25,000. Participants self-reported taking a mean of 4.2 (SD=3.51) prescription medications and had a mean physical function scale score of 62 (0-100 scale, 0=low function, 100=high function). While 59% had fallen at least once in the past year, only 41% of participants considered themselves at risk for falling. Also, while 33% had participated in an exercise program in the past, only 6% reported having ever participated in a fall prevention program. A total of 33% somewhat disagreed, disagreed, or strongly disagreed that they had resources to help learn about preventing falls, 35% thought that learning how to prevent falls would cost too much money, 41% reported that there are not enough community activities in the area where they live, and 45% reported that exercise is too hard for them to do.

Conclusions/Implications: Although the majority of participants had fallen at least once in the past year, most participants did not consider themselves to be at risk for falling and perceived barriers such as communities not having low-cost options for fall prevention. Interventions among older adults should address perceptions of fall risk and disseminate information about low-cost fall prevention programs that match older adults' physical function level.

346-Assessing the Impact of Pharmacist Intervention to Address Language Barriers in a Community Pharmacy. Hong J, Walgreen Co. & Western New England University College of Pharmacy and Health Sciences, Kleszczynski V, Walgreen Co., Mattison M, Shcherbakova N, Capoccia K, Western New England University College of Pharmacy and Health Sciences. Email: nsh0010@auburn.edu.

Objective: The objective of this study is to assess the impact of translation services utilization by pharmacy personnel in a community pharmacy. Secondary objectives include evaluating patient perceptions of these services and assessing proportions of days covered (PDC) of translated prescriptions in the limited English proficiency (LEP) patient population. According to the 2017 American Community Survey, over 25 million Americans who spoke a language other than English ranked their spoken English as less than "very well." Additionally, the findings of the Diabetes Study of Northern California (DISTANCE) illustrated that issues with medication adherence are more prevalent in the LEP population and can negatively impact health outcomes. Translation services are a resource to overcome language barriers and assist pharmacists in relaying accurate information in the patients' primary language to ensure adequate comprehension. In this community pharmacy, these services are available as translated printed information, transcribed on prescription leaflets and labels, and telephonic translation services. Currently, prescription information can be printed in 14 different languages while telephone translation is available in 16 languages. As a healthcare organization in the forefront of direct patient care, it is important to recognize language barriers and seek alternative solutions to ensure LEP patients are provided meaningful access to care.

Methods: When picking up prescriptions, patients will be asked to identify their primary language using a chart illustrating the 14 different languages available as translated prescriptions. These patients may choose to have their language indicator in their patient profile changed to their preferred language. In addition, patients with reported low PDC scores, validated through the pharmacy's adherence tools, will be offered the service if their primary language is not English, but is indicated as English in their patient profile. For those utilizing translation services, a survey will be provided to assess their perception of helpfulness of the translated prescription labels and its impact on their medication-taking behavior. PDC will then be calculated after patients have accepted the service and will be compared to baseline. Means and frequencies will be reported on variables such as patient age, sex, preferred language, and PDC values. Associations between patient-perceived helpfulness of services and patient demographics will be examined as well as its association with dichotomous PDC variable using chi-square tests with an alpha level of 0.05.

Preliminary Results: The results will identify best practices for the utilization of existing translation services.

Implications/Conclusions Language barriers have a significant impact on medication adherence. For LEP patients, lack of translation may negatively influence their understanding and medication-taking behavior which can lead to poor health outcomes. By increasing the accessibility and utilization of current language resources, such as translated labels, patients will be more aware of and can benefit from these available services. The impact of improving language access is essential in reinforcing patient understanding and adherence but must be meaningful to patients in order to improve health outcomes. Ensuring language services are being utilized is a step toward improved adherence and outcomes.

347-Impact of Pharmacist Intervention on Patient Actions Following Free Community Pharmacy Screening Events. Jeon J, Soribe N, University of Arkansas for Medical Sciences/Walmart Health & Wellness, Smith M, University of Arkansas for Medical Sciences, Hiland S, Walmart Health & Wellness. Email: janejeon2014@gmail.com.

Objective: The objective of this study is to gain insight about the impact of community pharmacists' intervention on patient actions following a free health screening. Chronic diseases are often undiagnosed or uncontrolled due to lack of patient awareness or access to care. Community pharmacists are in a unique position to deliver health screenings and educational conversations to the community in a nontraditional environment.

Methods: A qualitative study will be conducted to gather information about patient actions after interactions with community pharmacists at a free community pharmacy screening. Participants will be invited to participate in the study from 23 different health screenings taking place on September 21st, 2019. Participants with out-of-range blood pressure readings (systolic blood pressure ≥ 130 mmHg and/or diastolic blood pressure ≥ 80 mmHg) will be interviewed over the telephone. Research investigators will use a semi-structured interview guide to determine any patient actions taken for follow-up care, as well as potential influences and barriers to not seeking care. The number of patients will be collected with respect to: agreed to participate, met eligibility criteria, successfully contacted, sought follow-up care and did not seek follow-up care within two months of the pharmacist interaction at the health screening. Interviews will not be recorded; however, field notes will be recorded and summarized with the patient to validate their responses. Thematic analysis of positive influences or barriers to care will be analyzed from field notes.

Preliminary/Final Results: Research is still in progress. Data collection and analysis will begin after September 23rd. The study protocol has been reviewed and approved by both the University of Arkansas for Medical Sciences institutional review board and the Walmart HIPAA and Legal Teams.

348-Patient Knowledge and Perceptions of Opioid Drugs and Naloxone in the Community Setting. Johnson L, The University of Kansas & Balls Food Stores, Ruisinger J, The University of Kansas School of Pharmacy, Stafford E, Balls Food Stores, Melton B, University of Kansas School of Pharmacy. Email: lesley.johnson@ballsfoods.com.

Objective: The objectives of this study are to (1) evaluate the knowledge and perceptions of the general public regarding opioid drugs, (2) evaluate the knowledge and perceptions of the general public regarding the use of naloxone, and (3) determine if written opioid and naloxone education materials increase naloxone dispensing in the community pharmacy. Community pharmacists are among the most accessible health care professionals and, in light of the current opioid epidemic, are often asked a variety of questions about opioid drugs. The Centers for Disease Control and Prevention (CDC) describes pharmacists as essential members of the healthcare team in preventing opioid misuse and overdoses by engaging in prevention efforts. More research is needed to identify knowledge and perceptions of the general public with regards to opioids and naloxone in order to determine perceived barriers for uptake of naloxone prescriptions in the community setting.

Methods: A cross-sectional survey will be conducted at four pharmacies from the same grocery store chain in the Kansas City metropolitan area. All individuals presenting to participating pharmacies for an influenza vaccine from October 2019 to January 2020 are eligible if they are 18 years or older and literate in English. The 29-item survey will collect demographic information as well as evaluate knowledge and perceptions of opioid drugs and naloxone utilizing multiple choice, single answer, true/false, free-text response, and agree/disagree question formats. The survey will use a modified version of a previously published survey. The paper surveys will be distributed in person and completed on site. To ensure anonymity, participants will place the completed survey in a tamper-resistant collection box only accessible by the primary researcher. Written patient education materials regarding opioid overdose and the use of naloxone will be available at the pharmacy registers and distributed to participants upon completion of the survey. The written patient education materials will be developed utilizing information and handouts from the CDC. Descriptive statistics will be used to assess participant demographics. Participant knowledge and perceptions with opioid drugs and naloxone will be evaluated using chi-square. To determine if there is an increase in dispensing of naloxone prescriptions, the pharmacy's dispensing software will be utilized. The analysis of naloxone dispensing in pharmacies will be performed utilizing a Mann-Whitney U-test. An a-priori alpha of 0.05 will be used for analyses. Open-ended questions will be assessed for emerging themes. The study has been granted exempt status by the University of Kansas Medical Center Human Subjects Committee.

Results: Research in progress.

Conclusions/Implications The results of this study may identify patient knowledge gaps that affect perceptions regarding opioid drugs as well as the use of naloxone and could influence future opioid and naloxone related education initiatives led by community pharmacists.

349-Household Medication Inventory Survey. Lee S, Uden D, Schommer J, University of Minnesota College of Pharmacy. Email: leex6829@umn.edu.

Objective: Over the last decade, US literature suggests an overall increase in prescription use and polypharmacy. Additionally, low medication adherence rates, and unused, unwanted, or expired medications commonly stored at home have been persistently reported. People accumulate medications at home, but research inventorying these medications, and evaluating the risk to humans, animals, and environment is scant. The objectives of the study are to 1) inventory medications stored in US households and assess their storage locations 2) explore potential risk for exposure of residents and guests <18 yo and pets to the reported medications, and 3) evaluate the potential environmental risk of the medications.

Methods: 220 US Qualtrics panel members were surveyed regarding medications stored at home, residents, guests and pets in the

household. The reported medications were categorized by their common indications, and prescription status (Rx, OTC, or controlled substance). Medications with high risk of accidental ingestion by children and animals were identified in literature. Their frequencies in the survey responses were assessed with respect to residents or guests <18 yo, and pets in the household. Environmental risk was classified by the risk levels and the Persistence, Bioaccumulation, Toxicity (PBT) scores reported in the 2014-15 Environmentally Classified Pharmaceuticals from the Stockholm County Council.

Results: 154 (70%) responders completed the survey. Their geographic distribution matched the US census data. 49% of households had at least one resident <18 yo, 36% had at least one guest <18 yo monthly, and 73% had at least one pet. 66% of households had 1-4 medications, 27% had 5-10, and 7% had >10 medications. 66% were "taken daily," 28% taken "as needed," and 4% “not taken.” The most common indications were cardiology (26%), pain (20%) and depression or anxiety (14%). 58.5% were Rx-only, 36.4% were OTC, and 5.1% were controlled substances. The most common storage locations were kitchen (32%), bathroom (29%) and bedroom (21%). 62% were stored in a cabinet/closet, and 38% on a counter. Among medications with high risk of accidental ingestion by children and pets, NSAIDs were most frequently reported by the households. Of the households that had NSAIDs (30%), 57% of them had at least one resident or monthly guest <18 yo. 42% stored in their bathrooms, and 27% stored on a counter in bathrooms, kitchens or bedrooms. 32% of the households had at least one drug with the high environmental risk level or PBT score ≥6 out of 9. 52% had at least one drug with the moderate environmental risk level or PBT score ≥4.

Implications/Conclusions The findings indicate that many households may store medications in inappropriate locations. Frequently fluctuating temperatures and humidity in bathrooms are not optimal drug storage conditions. Medications stored on a counter can be easily accessed by children or pets, and susceptible to their accidental ingestion. Unknowingly, many households may store potentially environmentally harmful medications. In order to minimize risk of accidental ingestion, and environmental harm, pharmacists should educate patients better on proper storage and disposal of their medications.

350-Patient Opinions on Participating in Research Through a Community Pharmacy Practice-Based Research Network. Mook H, Jiang C, Coley K, Carroll J, McGivney M, University of Pittsburgh School of Pharmacy. Email: hnm14@pitt.edu.

Objective: The objective of this study is to gather patient opinions on research engagement strategies at local community pharmacies. Community pharmacies are the most accessible health care locations in the nation. This makes them extremely well-situated locations to engage patients in patient-centered outcomes research (PCOR). Patients are often asked to participate in research conducted through hospitals and physician offices. However, community pharmacies can provide research opportunities to a wider range of patients who may not regularly visit these other healthcare settings. A community pharmacy practice-based research network (PBRN) is developing in Pennsylvania. The patient opinions gathered through this research will inform engagement strategies for this community pharmacy PBRN.

Methods: Four regional focus groups representing western, central, northeastern and southeastern Pennsylvania will be conducted. One community pharmacy in each region will recruit patients to participate in each focus group. A focus group discussion guide was developed to include open-ended questions on patients’ relationships with their pharmacy/pharmacist, perceptions of research occurring at their local pharmacy, patient engagement methods, and research topic interests. This guide was reviewed and edited by a Stakeholder Advisory Board consisting of patients, pharmacists, and researchers prior to its use. Each focus group session will have a facilitator and an observer who records notes from the discussion. Sessions will be audio-recorded and transcribed verbatim. A codebook will be developed and further refined as new concepts emerge from the coding process. Focus group transcripts will be independently coded by two investigators using NVivo software and any coding discrepancies will be reconciled. A qualitative inductive analysis will be conducted by the research team to identify patterns and themes in the data. This study is supported by a grant from the Patient-Centered Outcomes Research Institute and is approved by the University’s Institutional Review Board.

Preliminary Results: Three patient focus groups comprised of 32 patients have been conducted to date. The fourth focus group will be completed in October 2019. Data collection and analysis are ongoing.

Implications: PCOR requires significant patient engagement to be successful. The ideas generated from patients in this study will guide engagement strategies utilized by community pharmacy PBRNs. The results will shape how future research is conducted in community pharmacies and highlight patients’ research topics of interest that can be used by research teams nationwide.

351-Using Journey Mapping to Understand the Patient Experience Associated with a Medicare Part D Plan Selection Service. Murry L, Witry M, The University of Iowa College of Pharmacy. Email: logan-murry@uiowa.edu.

Objective: The concept of mapping a consumer journey has been used by marketers to understand customer experiences, purchasing behavior, and brand loyalty. More recently, customer experience approaches have been used in healthcare to improve patient experience and inform service design. The objective of this study was to understand the patient experience of selecting a Medicare Part D plan for individuals that did, and did not, use a free pharmacy-led Medicare Part D consultation service. This process was aided by an online journey mapping platform.

Methods: This was a two-group cross-sectional survey study. The setting was a single, rural community pharmacy in the Midwest U.S. Survey questions were based on standard items from an online journey mapping platform and tailored to fit the Medicare Part D plan selection experience. The journey mapping platform requires 18 surveys be completed for each condition to develop a customer

persona representative of each group. Thus, between June and August of 2019, the pharmacy used purposeful convenience sampling to distribute a paper version of the survey to 18 patients who had used the Medicare Part D consultation service and 18 patients that had not used the service based on pharmacy records. Patients completed the surveys in the pharmacy or took them home and returned them to the pharmacy. Open-ended survey responses were coded by the research team using a basic qualitative content analysis approach. Scaled survey items were analyzed using descriptive statistics and Mann-Whitney U tests to compare differences in responses between the two groups. Survey data were entered into the online journey mapping platform. The platform generated Persona, Empathy, and Current Journey outputs, which mapped Good Experiences and Bad Experiences on the Medicare Part D plan selection journey.

Results: The two patient personas were different in their household incomes. Individuals who did not use the service most commonly reporting a household income of $50,000-$74,999 compared to $25,000-$39,999 for those who used the service. Results from the Mann-Whitney U test yielded 4 survey items that differed significantly ($p-<0.05$). Using the pharmacy service resulted in higher levels of collaboration and plan comparison during the Medicare Part D plan selection process, but also made decision-making more challenging. Both groups were similarly uncertain about the future based on their plan selection. The mapped experiences showed that service users had more deeply felt emotional journeys than non-users. Qualitative responses suggested trust was important to both groups. Individuals who used the service seemed to find it challenging to trust the pharmacist with plan information given the financial implications. Individuals who did not use the service trusted themselves or an agent with making the decision and its financial implications.

Conclusions/Implications: Using an online journey mapping platform was useful for gaining insight into how patients emotionally experience a pharmacy service. For pharmacies providing Medicare Part D plan consultation services, pharmacies should consider how they can leave users feeling confident they have made a good decision. Pharmacies may consider how differences in household income may influence the decision to use such a service.

352-Patients' Perceptions of Changes in the Appearance of Generic Medications. Ngo J, Salgado T, Caldas L, Virginia Commonwealth University: School of Pharmacy. Email: ngojm@vcu.edu.

Objective: The aim of this study will be to evaluate patients' perceptions of appearance changes in their generic medications due to manufacturer changes with regard to safety and effectiveness, preferences with medication appearance, and responses to medication appearance changes. Generic medications make up for around 70% of the total prescriptions sold in the United States. In community pharmacies, patients may experience a change in the appearance of their generic medications due to a manufacturer change based on availability, decreasing patient cost, or insurance restrictions. While the FDA requires generics to be bioequivalent to the originator drug, no regulations exist to enforce generic medications to look the same in color, shape, and size. Previous studies reported that patients depend on pill appearance to ensure that they are taking the right medication, and are more likely to be non-adherent or have negative health outcomes if they experience a change in the appearance of their medication.

Methods: This cross-sectional study will utilize a survey to assess patients' perceptions of appearance changes in their generic medications due to manufacturer changes. The study will be conducted at a Walgreens pharmacy in Richmond, VA, and will be anonymous. Eligible patients will include individuals who are 18 years or older and who have experienced a medication manufacturer change in the last 12 months. Recruitment will be performed by placing advertisements for the study at the pharmacy pick-up counter. Informed consent will be obtained prior to participation. Patients will be invited to take a modified version of a previously published survey developed to assess skepticism with generic medications. The survey consisted of three sections which included patients' perceptions of safety and effectiveness of generic medications, preferences on medication appearance, and responses to medication appearance changes. For the present study, we will utilize parts of those sections, which include items such as: concerns that the medication would cause more side effects, perceived value of consistency in medication appearance, and adjustments patient made in their regimen. Data collection will begin upon IRB approval and will be finalized by February 2020. Descriptive statistics will be used to present the data, with continuous variables being reported as means and standard deviations or as medians and interquartile ranges depending on data distribution, and categorical variables as frequencies and proportions.

Preliminary Results: Pending.

Implications/Conclusions: The results of this study will be helpful for community pharmacists to tailor medication counseling to address specific patient concerns and attitudes toward different appearances of generic medications, while reinforcing the importance of medication adherence. Learning more about patients' perceptions helps foster a healthy dialogue between the patient and the pharmacist. This could contribute to the "Know your Medicine. Know your Pharmacist" campaign whose primary objective is to emphasize the importance of pharmacists in the healthcare system and affirms that patients don't know their medicine without first knowing their pharmacist. Additionally, the findings could also be used in the campaign as an initiative for manufacturers to have consistent appearances or patient assistive markings for generic medication indication or identity.

353-Improving the Health of South Dakotans through the Prevention and Management of Diabetes and Cardiovascular Disease (CVD): A Landscape Analysis-The Patient Journey. Pinto S, Sirek A, Middendorf A, South Dakota State University, Hawkins-Taylor C, Xavier University. Email: sharrel.pinto@sdstate.edu.

Objective: The objective of the first year of the 5-year project was to conduct a landscape analysis of South Dakotan patients living with diabetes and CVD. Annually, approximately 8% of South Dakotans are diagnosed with diabetes, and 21,000 more have diabetes but are undiagnosed. Additionally, heart disease is the second leading cause of death in South Dakota, while stroke is the sixth. Patients in rural or frontier states often have to travel over 50 miles to see a primary care provider (PCP). Given these challenges, pharmacies and pharmacy-based services may represent an underutilized resource that are readily accessible for patients in rural parts of the country.

Methods: This was a qualitative project conducted to map the patients' health care journey and to identify barriers and facilitators to care. Patients that had been diagnosed with metabolic syndrome, diabetes, or CVD and/or taking medications for these conditions were eligible. Participants were recruited using newspaper ads, Facebook pop-up ads, word of mouth, poster displays, and flyers at health care facilities and commonly frequented locations such as grocery stores or gas stations. Interested patients were screened for eligibility and participated in either an elicitation interview (EI) or a focus group (FG). EI and FG were audio recorded, transcribed, and analyzed. Descriptive statistics and thematic analyses were performed using NVivo.

Results: Fifty patients participated and over half of the participants resided in rural communities. The majority of patients reported having a longstanding diagnosis (10 years or more) of type 2 diabetes (n=40). Thirty-five participants had been diagnosed with hypertension and 22 had been diagnosed with hyperlipidemia. Patients encountered eight distinct areas in their health care journey, starting with warning signs and symptoms and ending with the maintenance/recovery/stabilization phase. Patients reported various barriers and facilitators at various areas along this journey. For example, patients often could identify signs and symptoms, but struggled with identifying the appropriate health care practitioner or implementing a treatment plan recommended by a practitioner. Patients commonly reported a lack of understanding of their disease and medications and often did not feel empowered to effectively implement the recommendations made by providers; however, when they were enabled by members of the health care team such as a pharmacist, this barrier was minimized helping them reach their treatment goals and improve their quality of life. While patients were unfamiliar with the term Medication Therapy Management (MTM), they recognized that this would be a much needed and beneficial service. There was a general lack of awareness of pharmacy-based clinical services; however, patients often acknowledged that they would have utilized these services or requested them more often, had they been aware of them

Implications/Conclusions: Findings from Year One will allow for specifically targeted and customized programming for patients with diabetes and CVD. A statewide awareness campaign and community-specific targeted educational initiatives are being developed for Year Two of this project. By educating patients on the services a pharmacist can offer, pharmacists are able to become an accessible resource for patients, especially for those residing in rural environments.

Patient Care Services

354-Impact of a Medication Synchronization Program on Workflow Efficiency in a Community Pharmacy Setting. Ahamed A, UW-School of Pharmacy and Beaver Dam Hometown Pharmacy, Linde A, UW-School of Pharmacy. Email: aahamed@wisc.edu.

Objective: The primary objective of this project is to implement a medication synchronization program in a community pharmacy and evaluate the impact on pharmacy workflow. Secondary objectives include evaluating pharmacist and patient satisfaction and whether the medication synchronization program allows more time for clinical services.

Methods: We will conduct time-in-motion studies within the pharmacy before and after implementing the medication synchronization program at the pharmacy. Time-in-motion studies are a type of surveillance tool used in research to provide information about workflow activities from a snap shot in time that can be extrapolated. Data collection during the time-in-motion study will be completed by specially trained Industrial Engineering students guided by a data collection protocol developed for the study to measure specific workflow components. Aspects of workflow to be measured include patient wait time for chronic medication refills, the number of phone calls to the pharmacy requesting refills for chronic medications, and the amount of time a pharmacist spends in activities not related to medication dispensing. Potential barriers may include but are not limited to significant variability in amount of people coming into the pharmacy during specific time stamps and ensuring all data collectors do not miss any significant interaction or measurements. Data collection (i.e. time-in-motion observations) will occur during three weekdays (i.e. Monday, Tuesday, Wednesday) before the implementation of the program. A second data collection will take place at least three months after implementation during the same weekdays chosen for the pre-program data collection. Each student observer will have a stop watch, a data collection sheet, and will be assigned specific pharmacy staff to observe. Student observers will be in close contact with pharmacy staff to answer any questions during observations. We will pilot test the observation process to make sure the process is consistent across student observers and to increase the validity of measurements. Observations will take place for 8 hours on each weekday. Pharmacists and patients will be interviewed to assess satisfaction with the program and time available for clinical activities. Data collected will be analyzed using descriptive statistics. We plan to work closely with pharmacy staff to ensure that the medication synchronization program is implemented appropriately.

Results: Project is in progress.

Implications: A gap in the literature about medication synchronization programs is objective data about how they impact pharmacy workflow. Having objective measures for workflow activities and how medication synchronization programs impact them may help

increase mass adoption of medication synchronization programs.

355-Community Pharmacy Strategies for Success Under Value-based Program. Al-Khatib A, University of Iowa, Andreski M, Drake University, Pudlo A, Iowa Pharmacy Association. Email: arwa-al-khatib@uiowa.edu.

Objective: The objective of this study was to identify strategies that pharmacies used to perform well in a Value-Based Pharmacy Program (VBPP) on a selected set of performance metrics. Currently, community pharmacists are taking an active role to improve patients' outcomes. Evidence shows that community pharmacies' counseling and medication management services can increase patient adherence and enhance health outcomes. A large Midwestern-based insurer introduced their VBPP in two states in early 2017. Their objective was to create a bonus payment system (per capita) for participating pharmacies that perform high quality patient healthcare processes and limit health care costs. The VBPP uses a set of 18 metrics to rate pharmacy performance on two main domains: chronic disease management (e.g. asthma, diabetes) and cost and utilization (e.g. total cost of care).

Methods: A multi-case design was used for eleven pharmacies participating in the VBPP. A pharmacist from each pharmacy was interviewed about their approach to ten VBPP performance metrics: high and moderate intensity statin use, non-insulin diabetes medication adherence, asthma medication ratio, depression acute and continuation treatment adherence, depression use of the Patient Health Questionnaire-9 (PHQ9), diabetes HbA1C values documented, diabetes HbA1c control and total cost of care. A semi-structured interview guide was developed, phone interviews were audiotaped and transcribed. The interview transcripts were coded by two coders, analyzed, and a brief case report was written for each participating pharmacy. In addition, values for five metrics were obtained from VBPP performance data for the pharmacies: overall VBPP composite score, HbA1c documented, high intensity statin use, controller to rescue inhaler ratio and total cost of care.

Results: Six of the eleven pharmacies were units of small chains, while the remainder were independent pharmacies. The average time for the interviews was about 41 minutes. From the insurer performance data, eight pharmacies scored above median on the overall VBPP composite score for all 73 pharmacies in the VBPP. Results showed that medication adherence received attention through use of MedSync, tracking adherence at time of dispensing and nonadherence interventions with patients. Also, pharmacies were more engaged in cardiovascular and diabetes metrics in comparison to other metrics. All pharmacists were willing to recommend a change in patient's statin as needed. Also all of them were collecting HbA1c levels, despite challenges from mixed cooperation by physicians. For the asthma inhaler ratio metric, seven pharmacies reported monitoring controller inhaler adherence. Depression metrics received the lowest overall involvement, with lack of identification of patients with depression being a common obstacle. For total cost of care, five pharmacies used the VBPP dashboard to identify high cost patients they could manage, often using comprehensive medication reviews (CMRs), while four pharmacies focused on medication adherence.

Conclusions/Implications In summary, pharmacies approached the VBPP through familiar activities, such as addressing medication adherence and attention to medications for cardiovascular conditions/risks. Some pharmacies appeared further along than others in transforming their practice to free up pharmacists to deliver needed services. Also, better provider acceptance could help fulfill the pharmacists' roles in optimizing medication therapy.

356-Implementation and Evaluation of a Smoking Cessation Service in an Independent Community Pharmacy in California. Amranyan S, University of Southern California, School of Pharmacy. Email: samranya@usc.edu.

Objective: Tobacco use remains a leading cause of preventable morbidity and mortality in the United States. In 2016, there were 37.8 million Americans who were current smokers with a majority, about 70%, of smokers reporting a desire to quit. However, the annual rates of successful cessation remain low, at about 7%. It is known that quitting methods that combine both behavioral counseling and medications are more effective than either strategy alone or by quitting "cold turkey". This highlights the important role that pharmacists can play in assisting patients in a smoking cessation program. The 2013 Senate Bill 493 (SB-493) created an opportunity for pharmacists to be involved in these programs by expanding the pharmacist scope of practice. In 2016 the California Board of Pharmacy (BOP) approved regulations for a state protocol that authorizes pharmacists to independently furnish prescriptions for nicotine replacement therapy (NRT) to aid in smoking cessation. Additionally, the subsequent passage of the 2016 Assembly Bill 1114 (AB-1114) mandated payment for pharmacist services, including NRT, by Medi-Cal, the state Medicaid program. However, the regulations and payment mechanism for pharmacist services was not finalized by the CA Department of Health Care Services (DCHS) until April 2019, which established the rate of reimbursement at 85 percent of the fee schedule for physician services. As a result of the newly approved regulations from the BOP and DCHS, an independent community pharmacy in a large metropolitan area will establish and implement a pharmacist-delivered smoking cessation service that will utilize the state protocol to furnish NRT. In previous studies evaluating pharmacist-delivered services in a community pharmacy, payment for services and time constraints are often cited as top barriers toward implementation. It is hypothesized that pharmacist-delivered smoking cessation programs will lead to positive outcomes on cessation rates and that payment for services will be adequate to sustain the program. The objective of this study is to implement and evaluate a smoking cessation service at an independent community pharmacy. The secondary objective is to evaluate payment for services compared to time spent to determine cost-effectiveness. The tertiary objective is to describe the implementation process to identify best-practices and barriers.

Methods: Patients will be identified through on-site surveys to determine smoking status and insurance type. Qualified patients will be current smokers, ready to quit, and have Medi-Cal insurance coverage. Patients will be enrolled in a 16-week program with weekly

follow-ups focusing on behavioral counseling and use of NRT. Data collected will include patient demographics, NRT products used, smoking status at baseline and after 16 weeks, time spent on appointments, amount of payment collected from payers, and patient satisfaction surveys. Data will be evaluated using description statistics.

Preliminary/Final Results: To be determined.

Conclusions/Implications: To be determined.

357-Pressure Buildup: Integrating Advanced Practice Pharmacists into the Community Pharmacy Setting for Hypertension Screening & Management. Araniego R, University of California San Francisco (UCSF) & Walgreens, Zhou C, UCSF. Email: raymonpaul.araniego@ucsf.edu.

Objective: Reports provided by the Centers for Disease Control and Prevention (CDC) that only about 54% of 75 million U.S. adults with diagnosed hypertension have their blood pressure under control. This study allows us to gather information on the number of community members with untreated, undiagnosed, or uncontrolled hypertension and provide data for a future prospective observational study comparing outcomes of two cohorts in their hypertension management. The intervention group will involve community pharmacist-led blood pressure management in patients with undiagnosed hypertension and those who do not have regular primary care follow-up. And a comparison group of patients diagnosed with hypertension and managed through standard care led by a physician will be studied. The data will provide insight on how community pharmacies and pharmacists have a unique opportunity to intervene and provide hypertension management in this population and expand our clinical roles in the community pharmacy setting through managing chronic disease states.

Methods: This will be a prospective observational study where patrons at a Walgreens community pharmacy in San Francisco California will be recruited. The patrons will be asked about their interest in receiving a free blood pressure check during their visit. In addition, flyers posted in the pharmacy will be used for subject recruitment. Blood pressure will be measured by trained pharmacists and student pharmacists using a stethoscope and sphygmomanometer. Those subjects with high blood pressure after the first reading (systolic BP ≥ 140mmHg) will be asked to revisit the Walgreens pharmacy clinic to measure their blood pressure for a second reading to assess for hypertension (following 2017 AHA/ACC Hypertension Guidelines). Inclusion criteria are as follows: ≥ 18 years old, systolic BP ≥ 140mmHg at 2 screenings, complete set of baseline demographics, not on current dialysis, not on current chemotherapy or cancer treatment, and not pregnant. In order to minimize risk, we will be using a specific protocol developed by pharmacists to take blood pressure measurements and provide counseling. Baseline demographics including name, age, date of birth, phone number/email, blood pressure values, current medical conditions, current medications, risk factors, insurance information, current primary care provider information, etc. will be collected and stored using an encrypted questionnaire (Qualtrics) and an encrypted spreadsheet. A summary of statistics for baseline demographics (mean, median, range, standard deviation, etc.) will be obtained and the data will provide information on the populations with untreated, undiagnosed, or uncontrolled hypertension.

358-Student-Based Health and Community Services in Hispanic Areas. Armayor G, Czerwinska J, McGory R, Nappi R, Nova Southeastern University College of Pharmacy. Email: graciela@nova.edu.

Objective: The College of Pharmacy, located in a large Hispanic community, is committed to provide opportunities for students to translate knowledge and skills learned in the classroom into a community setting. Students are trained to monitor vital signs, conduct point of care testing, provide patient counseling services, evaluate medication therapy and engage in professional activities to meet patient medication, social, and health related needs. In addition to the curriculum, the co-curriculum requires students to provide community services. The college's commitment to community service aligns with the pharmacist's altruistic desire to serve patients, reflects expectations of ACPE 2016 Accreditation Standards, and fulfills the university's requirements to be recognized as a Carnegie Foundation Community Engaged Institution. The objective of this study is to evaluate the variety and level of engagement of students in delivering services to its community through the co-curriculum program. Membership in a student professional organization is expected of all students. Each organization conducts health fairs and community support events based upon their charter and assessment of the local population needs. All students are required to complete 10-12 co-curriculum experiences per year including at least one community health fair. Certification for immunization is completed in year 1 of the curriculum followed by Point of Care testing (National Association of Chain Drug Stores) in year 2. Student involvement and assessment of each community experience is captured electronically through a mobile device app. Participant self-perceived usefulness of each experience in advancing their personal and professional development is assessed using a 0-100% scale. Individual student data was aggregated and analyzed to evaluate participation level in community services and perceived usefulness of experiences to personal and professional growth. The College services three predominantly Hispanic communities (Community 1: 98% Hispanic; Community 2: 30% Hispanic; Community 3: 23% Hispanic; 2018 US Census: 18.3% Hispanic). In academic year 2018-2019 students completed 124 community-based experiences in these three communities: 57 health fairs and 67 other community services. Other services included fundraisers, community clean ups, food drives and Habitat for Humanity service. Seven hundred thirty-three (733) students had a total of 2486 community-based interactions (Community 1: 521, Community 2: 1660, Community 3: 305). Students entered 2486 reflections upon completion of the co-curricular events, of which 2146 (86.3%) indicated that the events were assessed to be useful in student personal and professional development. Individual perception of usefulness was high but varied between campuses (Community 1: 98% on average useful, Community 2: 88% on average useful, Community 3: 86% on average useful). The College of Pharmacy is very active in events that support the local populations. Students and student organizations provide health screenings, economic, and educational support to

the predominant Hispanic communities that have limited access to health care. Students perceive individual and professional growth as a result of their involvement in community projects. Commitment to community service will hopefully instill lifelong dedication to events supporting community needs.

359-Evaluation of a Pharmacist-Led Diabetes Collaborative Drug Therapy Management Service. Bald E, University of Utah College of Pharmacy, Kennelty K, University of Iowa College of Pharmacy, Triplett C, Beranek R, University of Iowa Health Care. Email: elizabeth.bald@pharm.utah.edu.

Objective: Pharmacists have been providing diabetes collaborative drug therapy management services at the University of Iowa Hospitals and Clinics in the internal medicine clinic since 2009 and in the family medicine clinic since 2013. Providers independently choose to refer patients and are also prompted to place consults by a best practice advisory (BPA) that triggers for patients with a HbA1c ≥ 9%. A previous study demonstrated that internal medicine patients achieved better clinical outcomes when enrolled in this service compared with the usual care. However, no studies have been conducted to examine the implementation and real-world effectiveness of this service. The primary objective of this study was to evaluate the pharmacist-led diabetes collaborative drug therapy management service in order to increase patient access, streamline the service, and identify potential barriers and facilitators to replicating the service with other disease states.

Methods: The pharmacist-led diabetes collaborative drug therapy management service was evaluated using the Reach, Effectiveness, Adoption, Implementation, Maintenance (RE-AIM) framework, an evaluation tool that examines individual and organizational factors of evidence-based interventions. Mixed methods were used involving an electronic survey of clinic providers, semi-structured telephonic interviews with patients, and a retrospective chart review from January 2018 – April 2019.

Final Results: Reach: 71.3% of patients who were independently consulted (n=184/258) and 1.6% (n=11/680) of patients who triggered a BPA were enrolled. Effectiveness: 27.7% of patients (n=54/195) enrolled were lost to follow-up. Adoption: 55% of eligible providers (n=77/140) have placed a consult. Implementation: Providers independently choose to refer patients and are also prompted to place consults by a BPA that triggers for patients with an HbA1c ≥ 9%. Thirty-one (n=31/140, 22.1%) providers returned surveys. Common reasons providers did not place a consult include: alignment with workflow, patient refusal, and patients followed by other services. Thirteen patients were interviewed. Patients reported increased accountability with disease state maintenance and improved self-efficacy. They valued the service and suggested ideas for improvement. Patients wanted more information on expectations before engaging with the pharmacist. They suggested to replicate this service with pain, cancer, and blood pressure management. Maintenance: 96.7% of providers (n=30/31) reported they were very likely/likely to place a consult in the future and 58% of providers (n=18/31) reported they were very likely/likely to place a consult when prompted by the BPA.

Conclusions/Implications: These results provide further support for the value of the pharmacist-led diabetes collaborative drug therapy service yet reveal barriers and facilitators to effectively integrating pharmacists onto primary care teams. Patients overall valued the service provided by pharmacists, and providers were willing to refer patients. However, the automated BPA was not successful in increasing referrals as it did not align with workflow. Key areas for improvement that were identified include increasing information provided to patients regarding expectations prior to enrollment and developing more efficient methods to assist providers in identifying eligible patients. This study also provides lessons learned and strategies for future adoption, implementation, and maintenance of similar services for other disease states.

360-Quantifying the Usage of a Veterinary Drug Information Resource to Provide Context to the Growth of Veterinary Pharmacy in Pharmacy Practice. Blythe E, St. Matthews Univeristy, School of Veterinary Medicine. Email: eblythe@me.com.

Objective: To quantify the numbers of pharmacists searching a prominent veterinary drug information resource and the specific drug monographs being viewed to in order to provide insight into the types of prescriptions being filled and potential indicators of pharmacist knowledge gaps. Multiple animal health outlets and retail pharmacies have documented the growth of veterinary pharmacy. There are increasing numbers of pet prescriptions outsourced to pharmacies by veterinarians for fulfillment by pharmacists but there is no published data on the exact number of pet prescriptions filled. Additionally, the National Association of Boards of Pharmacy has recognized gaps in a pharmacist's knowledge base in veterinary therapeutics and veterinary pharmacology. In the face of a knowledge gap but yet needing to provide safe and competent care to animals, what specific prescription drugs are pharmacists seeking information on as they provide pharmacy care to animal patients?

Methods: Plumbs Veterinary Drugs (PVD) has been identified as a highly utilized digital resource for prescribing veterinary medications. Data reflecting the numbers of pharmacists accessing the veterinary drug information resource as well as specific drug monographs viewed were evaluated as indicators of the most common prescription drugs and drug classes that are being filled by pharmacists.

Results: A search of PVD data base for the 8 month period of January-August 2019 revealed 484 pharmacist users in the United States accessing the data base conducting 51,100 total searches viewing 55,349 drug monographs. The average number of searches conducted per month was 6387 and 6918 average views per month. There were 717 unique monograph searches conducted and the top 30 most frequently viewed monographs were identified.

Implications: In the absence of quantifiable data on the exact numbers of pet prescriptions filled in community pharmacies,

examination of the most frequently searched drugs in a prominent veterinary drug resource can provide context on the growth of veterinary pharmacy. Data from PVD identifies the most common drugs being prescribed for animal patients and documents the fact that pharmacists are seeking support for the safe filling of veterinary prescriptions. The findings also support the recommendation by some Boards of Pharmacy for the inclusion of a veterinary drug reference in a licensed pharmacy.

361-Impact of a Community-based Pharmacist Driven Health Coaching Program on Clinical Outcomes and Health-related Quality of Life. Branson L, Branson L, University of North Carolina and Walgreens, Dyett A, Mustafa R, Walgreens #16122, Chapel Hill, NC, Rhodes L, Lloyd L. Gregory School of Pharmacy, Palm Beach Atlantic University, West Palm Beach, FL; PGY1 Community-based Pharmacy Residency Program, UNC Eshelman School of Pharmacy, University of North Carolina at Chapel Hill, Chapel Hill, NC, Marciniak M, PGY1 Community-based Pharmacy Residency Program, UNC Eshelman School of Pharmacy, University of North Carolina at Chapel Hill, Chapel Hill, NC.. Email: lauren_branson@unc.edu.

Objective: Of the $3.3 trillion spent annually on healthcare in the Unites States, 90% is attributed to chronic and mental health conditions. There is an urgency for providers to contribute to the fight against chronic illness and obesity as the cost of healthcare continues to climb. Chronic diseases are preventable, and are linked to unhealthy habits. A health and wellness coach may be the professional that could assist a patient in developing and meeting goals related to the management of chronic disease. Community-based pharmacists are uniquely positioned to deliver health and wellness coaching because pharmacies are an accessible health care destination. Pharmacists routinely use aspects of health care coaching during patient counseling interactions with a focus on medications. The first objective of this study is to integrate an innovative health coaching program into the workflow of a chain pharmacy location. The second objective is to evaluate the change in outcomes from the program, including clinical parameters, patient health-related quality of life, and patient satisfaction with the service.

Methods: This prospective cohort study will be conducted at one location of a chain pharmacy in North Carolina. Through implementation of an innovative program known as "COACH" (Collaborative Objective Approach to Cultivate Health), pharmacists in a community setting will provide health care coaching to patients with chronic conditions such as diabetes, dyslipidemia, hypertension or are overweight. Eligible individuals are English-speaking persons ages 18 years and older with at least one chronic health condition (e.g., diabetes, dyslipidemia, hypertension, overweight). Patients will be recruited from those filling prescriptions at the pharmacy, in need of a comprehensive medication review, or receiving other health care services such as immunizations. Upon enrollment, the pharmacist will perform a comprehensive medication review, along with an additional enhanced component where the patient is coached on lifestyle modifications (i.e., nutrition, exercise, and stress management) and creates personal health goals. The patient will complete a pre-survey regarding health-related quality of life. In the three months following enrollment, the pharmacist will conduct check-ins with each patient once-per-month; offer health coaching; collect blood pressure, blood glucose, and weight measurements; and track progress towards patient-identified goals. A post-survey will readdress health-related quality of life and patient satisfaction with the service. Data will be analyzed using descriptive statistics.

Preliminary Results: Institutional Review Board approval is anticipated in October 2019. Program enrollment will begin in November 2019 with data collection and analysis occurring through February 2020. This pilot project intends to enroll 25 patients.

Implications/Conclusions This project aims to show that when pharmacists provide patient care rooted in a holistic approach with health coaching, medication management and patient education, patients can achieve improved health outcomes and reach their health goals.

362-Patient Satisfaction of Acute Influenza Infection Point of Care Testing and Treatment in an Independent Community Pharmacy. Bryan K, Schadler A, Jones M, Kebodeaux C, University of Kentucky College of Pharmacy, Hanna C, American Pharmacy Services Corporation, Carr M, Eckmann L, Wheeler Pharmacy. Email: kyle.bryan@uky.edu.

Objective: Specific aims of this research are to: 1) determine patient satisfaction with the acute influenza infection antiviral therapy protocol service provided by an independent community pharmacy and 2) evaluate pharmacist workflow, including time to provide the service and frequency of patient intervention. The primary goal of this research is to evaluate the impact of a protocol-driven patient care service in a community pharmacy setting. Recent legislative and regulatory changes afford pharmacists the opportunity to provide protocol-driven care for authorized health conditions. Implementation of protocol-driven care for these health conditions is still relatively new.

Methods: This is an observational case study consisting of two phases. First, a questionnaire will be developed and administered to patients who have received point-of-care testing and treatment pursuant to the Acute Influenza Board-approved protocol. The questionnaire will collect patient demographic information and patient satisfaction measures related to the service itself, care provided by the pharmacists, ease of access, and affordability. The survey will be administered electronically using an iPad and electronic survey tool or paper survey and will be made available to patients after the patient has participated in acute influenza point of care testing at the community pharmacy. For patients under the age of 18, the parent/guardian granting authorization to test will be asked to take the survey. The survey is completely voluntary and will not collect any personally identifying information. The survey will be administered using REDCap, and responses will be collected over a four-month time-span during peak influenza season. In the second phase of the study, required internal pharmacy documentation of individual patient encounters will be retrospectively analyzed to determine number of tests performed, point of care results, and treatments received. Study results will be analyzed by

descriptive statistics.

Results: Institutional Review Board approval is in progress. It is hypothesized that patients will find the service to be easily accessible and that there will be a high satisfaction rate with the service, pharmacists, and affordability. Conclusions/Implications: Results will be used to determine the impact of a protocol-driven patient care service in terms of patient satisfaction and pharmacist work-flow in an independent community pharmacy setting. Results will inform future studies that are planned on a larger scale and in other types of community settings.

363-Academia-CPESN Transformation (ACT) Pharmacy Collaborative: Evaluating Value and Impact of the National Student Day of Service. Cothrel S, Jukic S, Coley K, Carroll J, McGivney M, University of Pittsburgh School of Pharmacy, Bacci J, University of Washington School of Pharmacy, Daly C, University at Buffalo School of Pharmacy and Pharmaceutical Sciences, Doucette W, The University. Email: sophia.cothrel@pitt.edu.

Objective: The objective of this project is to report the outcomes of a National Day of Service executed through the ACT (Academia-CPESN Transformation) Pharmacy Collaborative. The ACT Pharmacy Collaborative is an operational learning collaborative between schools/colleges of pharmacy and clinically integrated networks of community-based pharmacies. A total of 59 schools/colleges of pharmacy have joined the Collaborative as of October 2019. In November 2019, student pharmacists from ACT-member schools will partner with local community pharmacy enhanced services networks (CPESNs) and community pharmacies across the country to provide health education and patient care service through the inaugural national "Day of Service."

Methods: ACT Champions, who are the lead faculty or staff representatives from their respective schools/colleges of pharmacy, will work with students, organizations, and other faculty to invite local CPESN and/or innovative community pharmacies to serve as hosts for Day of Service events. Students will provide marketing materials, including social media tools, to pharmacies to advertise the event to the community. Day of Service events may include: medication adherence education, blood pressure and immunization screenings, and referral to patient care services at the pharmacy. A mixed methods approach will be used to evaluate outcomes of the Day of Service. Students will document their patient care experiences and self-reflections through a standardized survey designed by the ACT Pharmacy Collaborative. The survey will elicit: (1) volume and type of patient care education and services provided; (2) number of students involved; and (3) students' perceptions on the impact of the experience. Descriptive statistics will be used to analyze data from fixed-choice survey questions. A qualitative content analysis of the open-ended survey responses regarding student experiences will be performed. These survey questions aim to reveal meaningful experiences and significant learnings by students as a result of participation in the Day of Service.

Results: Research in progress. During November 2019, students at the schools/colleges of pharmacy in the Collaborative will be executing Day of Service events. Data collection will continue through the end of November 2019.

Implications/Conclusions: This project will highlight the impact that partnerships between schools/colleges of pharmacy and CPESN pharmacies can have on students, pharmacies, and communities. Community pharmacies are transforming their business models to deliver enhanced patient care services. Implementing the National Day of Service may provide one approach that schools/colleges of pharmacy can use to support pharmacies with this practice transformation.

3**64-Transforming Community Pharmacy Practice Across Pennsylvania through Flip The Pharmacy.** Cothrel S, Antinopoulos B, Carroll J, Coley K, McGivney M, University of Pittsburgh School of Pharmacy, McGrath S, Pennsylvania Pharmacists Care Network. Email: sophia.cothrel@pitt.edu.

Objective: The objective of this practice innovation is to develop and implement a process that utilizes coach teams to facilitate community pharmacy practice transformation across Pennsylvania through the Flip the Pharmacy (FtP) program. FtP is a nationwide, scalable community pharmacy practice transformation effort, sponsored by the Community Pharmacy Foundation and led by CPESN-USA, to transform pharmacy practices from a traditional, prescription-driven model to a patient-centered care model that achieves sustainable business growth. FtP utilizes peer coaching and data-driven milestones to measure pharmacy transformation progress. A coach/coaching team is assigned to participating pharmacies to guide them through "Change Packages" and hold them accountable to program goals and milestones. The FtP Pennsylvania Leadership Team (PLT) developed a standardized process that utilizes coaching teams to prepare Pennsylvania to meet FtP milestones and facilitate practice transformation statewide.

Methods: To achieve the program objectives, the FtP PLT utilizes the Four Disciplines of Execution: Focus, Leverage, Engagement, and Accountability. Focus: Our focus is to transform community pharmacy practice in our regional CPESN network, the Pennsylvania Pharmacists Care Network (PPCN). Leverage: We leveraged our partnerships and resources across Pennsylvania to increase enthusiasm and opportunities. The FtP PLT identified potential practice transformation coaches by considering: (1) proximity to pharmacies, (2) community pharmacy faculty representation from all seven Pennsylvania schools of pharmacy, and (3) community pharmacist practitioners and owners. We sought to pair community pharmacy owners and/or practitioners with school of pharmacy faculty to bring together complementary skills and create coaching teams. We also leveraged pharmacy learners of all levels (students, residents, fellows) and implementation science experts to create practice transformation tools and evaluate effective coaching techniques. Engagement: Social events at state association meetings were established as an implementation strategy to promote network weaving. We are also creating an engagement performance dashboard to enable pharmacies to track and share their progress with coaches. Accountability: Coaching teams will be held accountable for meeting FtP goals by participating in: (1) change

package training webinars, (2) Pennsylvania coaches calls, (3) coach-pharmacy check-in calls, (4) coaching team one-on-one calls with the PLT, and (5) pharmacy site visits.

Results: The PLT was awarded FtP grant funding in September 2019. Community pharmacies were then invited to apply to Pennsylvania's FtP program, launching on October 1, 2019. The PPCN Board reviewed the 57 applications submitted and selected 40 pharmacies to participate. Pennsylvania has 12 coaching teams composed of over 20 individuals paired with pharmacies based on geography and existing professional relationships. The additional 17 pharmacies that applied will be supported on an ad hoc basis by coaches who are located near the pharmacy and willing to volunteer their time. However, these pharmacies will not be held accountable to the program goals. For the duration of the program, participating pharmacies will be assessed based on achievement of FtP milestones.

Implications: Practice transformation efforts in community pharmacies nationwide are ongoing. Our approach in Pennsylvania using coach teams for facilitating FtP may inform others leading practice transformation efforts across the country.

365-What are the Unique Contributions and Values a Pharmacist Brings to a Disease State Management Program? Dietrich S, SpartanNash/Ferris State University, Ellis A, Roath E, Roth H, Curtis R, SpartanNash. Email: sophia.dietrich@spartannash.com.

Objective: The objectives of this study are to identify and quantify pharmacist provided interventions, estimate cost avoidance due to pharmacist interventions, and determine the value proposition for pharmacist delivered disease state management services utilizing a patient care manager (PCM) developed for the SpartanNash Care Squared (SNC2) program.

Methods: A retrospective chart review of the interventions conducted between July 1, 2019 and January 31, 2020 within the PCM will be recorded for a given patient encounter. An assessment of the interventions will be done by study investigators to quantify the encounter. As part of this review investigators will assign value to each intervention based on established literature or current models utilized within the healthcare system. Interventions will be included for patients who attest to having the following chronic disease states prediabetes, diabetes, and asthma/chronic obstructive pulmonary disease (COPD). Data for this study will be retrieved from the PCM that is secured on the SpartanNash network and password protected. The services will take place at the SpartanNash corporate office and will be delivered through a face-to-face meeting or by video. The study will include patients that participate in the SNC2 program and have had a pharmacist encounter on or after July 1, 2019 – January 31, 2020. Demographics will be recorded to assist in identification of trends. The retrospective chart review will be performed by the SpartanNash pharmacy resident. The chart review and data collection will begin after the Institutional Review Board (IRB) and continue until January 31, 2020 to allow for a full six months of data to be documented and collected. The reviewer will look at the following interventions documented on the PCM by the clinical pharmacist. Reports will be run through the PCM to determine the endpoints of the interventions completed by the clinical pharmacist. Results will indicate if an intervention was successful based on endpoints assigned to respective interventions. These results will be recorded and sorted in an excel spreadsheet for quantification. The endpoints will be quantified based on current literature's indication of cost-effective interventions performed by pharmacists and/or statistically significant improvement in outcomes following pharmacist interventions.

Preliminary Results: Results of this study will improve efficacy of pharmacist interventions, determine cost-effectiveness of patient interventions and achieved outcomes, and allow for value to be assigned to pharmacist delivered disease state management services for the SNC2 program.

Implications/Conclusions: The results of this study will allow for greater efficiency in both documentation of encounters and interventions provided as well as determine the value of these interventions for the patient and SNC2 program.

366-Monitoring in Community Pharmacies: Communication and Documentation. Doucette W, Al-Khatib A, Witry M, University of Iowa, Arya V, St. John's University, Bakken B, Medical College of Wisconsin, Gaither C, Schommer J, University of Minnesota, Kreling D, Mott D, University of Wisconsin -Madison. Email: william-doucette@uiowa.edu.

Objective: The objective of this study was to describe community pharmacist communication with patients about their medication therapy and documentation of clinical indicators for the chronic medication therapy. Community pharmacists are positioned to monitor medications for chronic diseases. Two key components of monitoring chronic medication therapy are pharmacist-patient communication and documented clinical indicators. There is evidence lacking about community pharmacists having discussions with patients about chronic therapy and documenting clinical indicators.

Methods: This research is from the 2019 National Pharmacist Workforce Survey (NPWS). An electronic survey link was sent to a random sample of 96,110 licensed U.S. pharmacists. Variables included core questions for all sampled pharmacists, with targeted questions about community pharmacists' activities in monitoring and documenting chronic medication therapy. One item asked to check all that apply for having in-depth conversations with patients over the past month about their medication therapy for six conditions: high cholesterol, hypertension, diabetes, warfarin/INR value, opioid use/deprescribing, antidepressant use. A second item asked about documenting a value in the past month for six clinical indicators: cholesterol levels/lipid panel, BP reading, HbA1c, INR level for warfarin, pain scale for opioid, depression scale (PHQ9). In addition to item frequencies, two 6-item measures summed the yes responses for each of the two components of monitoring.

Results: There were 2,122 usable responses from pharmacists working in a community pharmacy setting. Diabetes and hypertension

had the highest frequency of monitoring communications, with 757 (35.7%) and 755 (35.6%) respectively. The overall mean for the 6-item sum score of monitoring communications was 3.4, with a range from 3.0 (health system retail) to 3.5 (mass merchandiser, supermarket). The overall percentage of respondents reporting at least one activity of monitoring communications was 46.8 percent, while it ranged from 42.9 percent in independent pharmacies to 55.4 percent in health system retail pharmacies. Blood pressure was the most commonly documented indicator (10.1%), while hemoglobinA1c was next (4.6%). The overall mean 6-item sum score of documenting clinical indicators was 1.7, with a range from 1.4 (large pharmacy chain) to 2.4 (independent pharmacy). The overall percentage of respondents reporting at least one activity of documenting clinical indicators was 11.7 percent, while it ranged from 6.6 percent in independent pharmacies to 16.1 percent in mass merchandisers.

Conclusions/Implications Almost half of community pharmacists reported having in-depth conversation with patients related to a chronic condition in the past month, especially for cardiovascular conditions/risks. Patients with such conditions frequently visit community pharmacies, so these types of interactions should occur often. Less positively, few community pharmacists (11.7%) reported documenting a clinical indicator in the past month. The 1-month time frame may under-represent the actual frequency of documented indicators at community pharmacies. However, the low percentages of community pharmacists reporting such monthly documentation suggest that such indicators are not being regularly collected to monitor chronic medication therapy in community pharmacies. Policies that help connect community pharmacies to electronic health records can address this limitation in monitoring. Also, future research is needed to understand community pharmacists' challenges to monitoring chronic medication therapy.

367-Managing Medication Complexity in the Community. Doucette W, University of Iowa, McDonough R, Deninger M, Kent K, Towncrest Pharmacy, Hughes K, Albertson Companies. Email: william-doucette@uiowa.edu.

Objective: The objective of this study was to implement and evaluate the Less CoMMplex service in a community pharmacy to reduce and manage medication complexity. For many Americans, the complexity of their medication therapies can increase from visiting several providers, who may prescribe multiple medications that need to be taken at different times. Community pharmacists are positioned to work with patients and prescribers to manage medication complexity.

Methods: In a progressive community pharmacy, the Less CoMMplex service focused on patients at least 50 years old with the goal to reduce the medication complexity of patients, identify and resolve medication-related problems (MRPs) and work collaboratively with other providers. A medication complexity score, the Iowa Medication Complexity Score (IMECS), was used to sort patients into three categories, which determined the intensity of intervention. The IMECS values were the sum of five components calculated for a 180-day lookback period: number of different medications dispensed, number of dates of dispensing, number of high-risk medications, number of dosage forms and number of prescribers. Patients in the low complexity group received continuous medication monitoring (CoMM), in which MRPs were identified, addressed and documented at the time of dispensing. Patients in the medium complexity group received CoMM services, but also had targeted interventions (e.g. fall risk assessment). Patients in the high complexity level received CoMM services, and also received a comprehensive medication review (CMR). These CMRs included an 8-item assessment of social determinants of health (SDHs). A retrospective pre-post design was used to evaluate the Less CoMMplex service over a 9-month treatment period. Variables evaluated were: the IMECS values, identified MRPs, pharmacist actions to address MRPs, SDHs, and patient demographics. Data were obtained from baseline and treatment period extractions from Towncrest's dispensing system. Analyses included calculation of frequencies and descriptive statistics for all variables. A paired t-test compared baseline IMECs values with treatment period IMECS scores.

Results: Over 1,000 patients received Less CoMMplex with 148 high complexity patients receiving a CMR. On average, this high complexity group had 7.4 medical conditions and about 60 percent were female. During the 9-month treatment period, 10,535 MRPs were documented, as were 10,482 interventions, for all patients. The most common MRP types were Medication nonadherence (40.3%), Patient counseling indicated (17.1%), Therapeutic duplication (16.8%) and Needs additional therapy (8.9%). The most common interventions were Continue to monitor (35.6%), Patient counseling (16.6%), No change in therapy (12.8) and Drug discontinued (10.0%). Paired IMECS scores were obtained for 661 patients, with the mean baseline IMECS being 28.63 and treatment period mean IMECS of 27.29 ($p<0.01$). A total of 324 (49.0%) of the patients showed a decrease in the IMECS, while 146 (22.1%) showed an increase. Transportation challenge was the primary SDH issue identified.

Implications/Conclusions: A medication complexity service was able to reduce patients' medication complexity scores, while identifying and addressing many MRPs through a tiered approach. The use of the IMECS to sort patients for different services provided efficiencies to the pharmacy and patients. Future research is needed on this promising care model.

368-Integration of Medication Therapy Management (MTM) services in two outpatient pharmacies. Figueroa Cruz A, Fu D, Blackwell J, Green R, Lengel M, Zvaleny J, Johns Hopkins Home Care Group. Email: afiguer4@jhmi.edu.

Objective: The objectives of this project are to: 1) develop and integrate MTM services as part of the daily workflow in an outpatient pharmacy setting, 2) quantify the completion of MTM interventions pre and post service implementation, and 3) identify reasons leading to incomplete cases. MTM is a service using a systematic approach to review a patient's medications and conditions to optimize therapeutic outcomes, ensure the most effective use of drug therapy, and prevent costly medication-related problems. Our current model for providing MTM services includes five off-site pharmacists covering ten pharmacies, reaching out to patients telephonically. Eligible patients to receive MTM services are identified through two online platforms, Mirixa and OutcomesMTM.

Recurring challenges related to the current MTM model are inability to reach patients, patients not returning phone calls, and patients not showing up for scheduled in-person visits.

Methods: Current pharmacist and pharmacy technician duties, along with the pharmacy dispensing workflow, in the two pilot locations will be evaluated to determine how MTM services can be incorporated, identify challenges pharmacy staff may face and consider workload barriers. An observational phase will be conducted between October 2019 and November 2019 to determine how the MTM services will impact the current workflow. Based on the evaluation, a workflow will be developed for each pilot location. Training will be provided during November 2019 and December 2019 to all pharmacy staff by the off-site pharmacists currently providing the service. MTM cases identified within Mirixa and OutcomesMTM for patients 18 years and older from the two pilot locations will be included in the study. The implementation process will be conducted during January 2020 through March 2020. Pre-intervention and post-intervention data collection will include reasons for case referrals, type of services identified through the online platforms, and the result of services, which will be categorized as cases completed, cases lost, unable to reach patients, or patients declining the service. Data listed above will be collected from January 1st, 2020 to March 31st, 2020 and will be analyzed and compared with data before the implementation of the service within the same months of the previous year.

Results: Research in Progress.

369-Incorporation of Health Condition-Specific Status Assessments into a Medication Synchronization Program. Gilliam M, University of North Carolina at Chapel Hill, Clifton C, Trahms K, Howe A, Branham A, Moose J, Moose Pharmacy, Rhodes L, Palm Beach Atlantic University, Marciniak M, UNC Eshelman Shool of Pharmacy, University of North Carolina at Chapel Hill. Email: mark@moosepharmacy.com.

Objective: Medication synchronization describes a pharmacy workflow process through which a medication regimen is simplified via alignment of prescription refills, thereby allowing the patient to pick up all of their medications during a single visit. Medication synchronization is a collaborative effort between the patient and pharmacy staff that provides direct and regular contact between the two. Proper adherence to medications is necessary for patients to receive the greatest benefit; however, approximately 50% of patients with chronic health conditions do not take their medications as prescribed. Medication nonadherence leads to unsuccessful therapy outcomes, negative health effects, and increased economic burden. Medication synchronization has been shown to increase medication adherence, but little is known regarding the impact on clinical outcomes or how they may contribute to closing gaps in care. This study aims to (1) define a workflow process that utilizes members of the pharmacy staff to identify and assess medication-related problems and interventions in patients enrolled in a medication synchronization process and (2) implement the workflow process and assess the closure of gaps in care for any reported medication-related problems.

Methods: This prospective cohort study will be conducted at two locations of an independent community pharmacy in rural North Carolina. Patients will be eligible for study inclusion if they are 18 years of age or older, are currently enrolled in a medication synchronization process, and have diabetes, hypertension, or both. Patients will be excluded from the study if they are non-English speaking, or unenroll from the medication synchronization process during the study timeframe. Using a health condition-specific questionnaire developed by the investigators, pharmacy staff will identify medication-related problems during the medication synchronization phone calls for eligible patients. Medication therapy or health condition problems will be documented in an investigator-developed Microsoft Excel spreadsheet. Additional information to be documented will include patient demographics, health condition(s), prescription(s), medication-related problem(s) identified, guideline recommended intervention(s), and acceptance or rejection of the recommended intervention(s). Descriptive statistics will be used to analyze results.

Preliminary Results: Institutional Review Board approval is anticipated in October 2019. The workflow process will be implemented in November 2019, with data collection and analysis occurring through February 2020.

Conclusions/Implications: Incorporating health status assessments into the medication synchronization workflow process can afford opportunities to provide a higher quality of care for complex patients. By focusing on patients with diabetes or hypertension, pharmacy staff can encourage the self-monitoring of health conditions and documentation of self-monitoring results. Leveraging a systematic process may allow the pharmacist to identify medication-related problems and ensure the patient is receiving optimal medication therapy.

370-Pharmacist-Prescribed Hormonal Contraception in the State of Colorado. Gotfryd M, King Soopers/University of Colorado Skaggs School of Pharmacy, Ward K, King Soopers/City Market. Email: matthew.gotfryd@cuanschutz.edu.

Objective: In 2011, 6.1 million pregnancies occurred in the United States of America. Of that total, 2.8 million were unintended pregnancies (45%).1 In June 2016, the Colorado Governor, John Hickenlooper, signed Senate Bill 16-135 calling for the Colorado Board of Pharmacy to expand the scope of collaborative practice agreements and creations of statewide protocols (SWP). On January 19, 2017, the Colorado Board of Pharmacy approved Rule 17: Collaborative Pharmacy Practice which included Appendix A: Protocol for Prescribing Hormonal Contraceptive Patches and Oral Contraceptives.2,3 The primary objective of this study is to describe the advanced clinical service of pharmacist-prescribed hormonal contraception in the state of Colorado. The secondary objective of this study is to describe and provide supplemental training for areas in which pharmacists are uncomfortable in prescribing hormonal contraception.

Methods: This is a descriptive study of 147 pharmacies within one regional division of a large community pharmacy chain in Colorado providing hormonal contraception services. Data that will be collected includes patient demographics, blood pressure, reason for referral (if referred), medical conditions and history, hormonal contraceptive dispensed, and primary insurance coverage. Pharmacists who have been engaged in the service will be surveyed to assess areas in which they are uncomfortable when prescribing hormonal contraception. After this, there will be a training developed based on the pharmacist's responses.

Preliminary/Final Results: 1493 patients were prescribed hormonal contraception between June 1, 2018 to July 18, 2019. Further analysis to be presented.

Conclusions/Implications: To be determined.

371-Impact of Patient Counselling on Quality of Life in Stroke Patients at a Tertiary Care Hospital in South India. Gottipati S, vignan Pharmacy College, Uppalapati S, Vignan Pharmacy college. Email: satheeshsg@gmail.com.

Objective: Patient counseling is defined as providing medication information orally or in written form to the patients or their representatives on directions of use, advice on side effects, precautions, storage, diet and life style modifications. The main goal of patient counseling is to improve quality of life to the patient. With appropriate Counseling, patient becomes an informed, and active participant in improving his health outcome. AIM: To study the impact of patient counseling on quality of life in stroke patients at a Tertiary care hospital in south India with a goal to enhance their quality of life. OBJECTIVES: ? To assess the quality of life in stroke patients. ? To reduce the frequency of hospital visits. ? To increase the medication adherence by counseling the patient regarding their disease& medications.

Methods: It is a prospective observational study conducted at a tertiary care hospital for a period of 6 months. It includes selection of 100 human subjects based on inclusion and exclusion criteria. Patient's demographic details, patient condition, past medical history, past medication history and present medications were collected. The Patients were counseled regarding their medications and were followed up for 6 months and medication adherence, frequency of visits, knowledge regarding disease, knowledge regarding medications, modified Rankin scale (MRS) and Glasgow coma scale (GCS) for the assessment of quality of life were checked. All the data was recorded in Microsoft excel. Statistical IBM SPSS software is used to calculate Relevant mean scores, t-values & probability (P) values using paired t-test at a confidence interval of 95% and the accepted level of significance is 5%.

Results: The quality of life was assessed between intervention and control groups. Significant difference was observed between the pre-counseling and post-counseling mean scores of intervention group. Significant difference was not found in case of control group mean scores. There is no significance difference observed in control group regarding the parameters related to quality of life at confidence interval of 95% and p value >0.05

Conclusion: We found significant improvement in quality of life parameters in intervention group to that of control group mainly in the frequency of visits, medication adherence, knowledge regarding disease, knowledge regarding medications, re-occurrence of stroke and patients improved adherence to regular monitoring of blood pressure and blood glucose levels. Our study confirms that patient counseling had positive impact on quality of life due to reduced frequency of visits, improved medication adherence, improved MRS, GCS scores, improved knowledge regarding diseases mainly by life style modification, knowledge regarding medications and its importance in disease management helped to achieve good therapeutic outcome thus finally improve the quality of life in intervention group when compared to control group.

372- Development and Implementation of an Influenza Point-of-Care Testing Service in a Chain Community Pharmacy Setting. Hardin R, Kebodeaux C, University of Kentucky College of Pharmacy, Roberts P, Hudspeth B, Tracy A, Baldwin L, Raque M, Kroger. Email: rachel.hardin1@uky.edu.

Objective: The objective of this study is to describe the development and implementation of an influenza point-of-care (POC) testing service in a large community pharmacy chain location in accordance with a protocol. Acute Influenza Infection Antiviral Therapy is one of 13 Board of Pharmacy-approved protocols allowing for pharmacist-initiated medication dispensing in the treatment of approved conditions. The Acute Influenza Protocol utilizes CLIA-waived POC testing to guide appropriate medication selection and dispensing with rapid and reliable results. Increased utilization of POC tests in community pharmacies can increase patient access to care for influenza and improve health outcomes.

Methods: This is a prospective implementation study for a POC influenza testing service that will be piloted in a single pharmacy location of a large community pharmacy chain. The service will be offered by pharmacists that have completed ACPE-approved training pursuant to the protocol requirements. The pharmacists will utilize a CLIA-waived rapid influenza diagnostic test (RIDT). The implementation of the service will be evaluated by analyzing the number of POC tests conducted, RIDT results (number positive versus number negative), and appropriate influenza treatment dispensed pursuant to protocol. Demographic data will be collected as required by protocol including age, symptoms, vaccination status, and date and time of each encounter. Patient demographic and outcome data will be reported using descriptive statistics.

Results: Research in progress. Data will be collected from November 2019 through February 2020.

Conclusions: Research in progress. The goal of this pilot study is to demonstrate the usefulness of this service and highlight

opportunities for growth to implement the service on a large scale.

373-Identifying Barriers to Selling Nonprescription Syringes: A Survey of Pharmacy Technicians in North Carolina. Hudgins T, Rhodes L, Marciniak M, UNC Eshelman School of Pharmacy, Lenell A, Bible M, Walgreens, Carpenter D, University of North Carolina at Chapel Hill. Email: tina.lthudgins@gmail.com.

Objective: North Carolina witnessed a 3-fold increase in acute hepatitis C cases from 2010 to 2014, 84% of which were mostly due to injection drug use (IDU). Hospitalizations from IDU-related infective endocarditis in North Carolina increased 13.5-fold from 2010 to 2015. The transmission of blood-borne infections in these cases are due, in large part, to needle/syringe or equipment sharing among people who inject drugs. Providing access to clean syringes is an effective method to reduce infections among people who inject drugs (PWID). Nonprescription syringe sales are legal in 48 states and the District of Columbia, yet there are still barriers for PWID to receive access to clean syringes. Pharmacy technicians are the first point of contact for most patient interactions at community pharmacies and can often determine the course of the patient's experience in the pharmacy. To date, there are no published studies that examine the impact of community pharmacy technicians on nonprescription syringe sales. This study aims to: 1) identify community pharmacy technicians' attitudes and knowledge on nonprescription syringe sales and harm reduction and 2) examine urban-rural differences in technicians' syringe sale attitudes and behaviors.

Methods: This cross-sectional study will be conducted via a web-based Qualtrics survey. Using the North Carolina Board of Pharmacy's database, a link to a 25-item questionnaire will be emailed to all actively registered community pharmacy technicians in North Carolina. Survey items include demographic information; questions on willingness to participate in nonprescription syringe sales; and questions on perception, knowledge, and role in harm reduction. There will be an open-ended response question to assess additional factors that influence pharmacy technicians' attitudes and behaviors related to nonprescription syringe sales. The questionnaire will be pilot-tested among a convenience sample of pharmacy technicians for feedback on questionnaire format and clarity. Completion of the survey is voluntary and anonymous. The survey will remain open for 30 days with a reminder email sent on day 15. Participants will have a chance to win a gift card as an incentive for survey completion. Descriptive statistics will be used to analyze survey results. Chi-square tests will be used to examine differences in attitudes and behaviors between urban and rural pharmacy technicians. Qualitative data from the open-ended questions will be analyzed thematically using inductive and deductive coding. Preliminary

Results: Institutional Review Board approval is anticipated in October 2019. Surveys will be completed by December 2019, with data analysis occurring in January-February 2020.

Conclusion/Implications: The authors hope to gain insight on North Carolina pharmacy technicians' knowledge and attitudes toward nonprescription syringe sales through this survey. Data from this study can inform the development of community pharmacy-based interventions to improve access to clean syringes for PWID and to increase community pharmacy technicians' understanding of their role in harm reduction.

374-Implementation of a Baseline Community Pharmacy Practice Assessment Tool for the Pennsylvania Flip the Pharmacy Program. Hughes E, Rosikiewicz C, Cothrel S, Antinopoulos B, Carroll J, Coley K, McGivney M, University of Pittsburgh School of Pharmacy, McGrath S, Pennsylvania Pharmacy Care Network. Email: EEH47@pitt.edu.

Objective: The objective of this project is to create, deploy, and evaluate a community pharmacy practice assessment tool that gathers information on pharmacies' readiness for practice transformation as it relates to Flip the Pharmacy (FtP). FtP is a nationwide, scalable community pharmacy practice transformation effort sponsored by the Community Pharmacy Foundation and led by CPESN-USA to transform pharmacy practices from a traditional, prescription-driven model to a patient-centered care model that achieves sustainable business growth. FtP utilizes peer coaching and data-driven milestones to measure pharmacy transformation progress. In Pennsylvania, there are over 20 coaches supporting 40 community pharmacy locations, which are all members of Pennsylvania's CPESN, the Pennsylvania Pharmacists Care Network (PPCN). The overarching goal of this project is to utilize and adapt a tool that coaches can use to measure baseline readiness for and effectively guide pharmacies through practice transformation.

Methods: To develop the comprehensive assessment tool, information was collected and triangulated from three sources. First, a comprehensive literature review was conducted to gather information on patient care services provided at community pharmacies throughout the country. Second, the American College of Clinical Pharmacy (ACCP) Comprehensive Medication Management Practice Management Assessment tool was adapted to collect information from pharmacies using the six FtP practice transformation domains as a framework. These domains are: (1) Leveraging the appointment-based model, (2) Improving patient follow-up and monitoring, (3) Developing new roles for non-pharmacist support staff, (4) Optimizing the utilization of technology and electronic care plans, (5) Establishing working relationships with other care team members, and (6) Developing the business model and expressing value. Finally, an expert panel consisting of faculty, pharmacist experts, and the PPCN Board informed revisions to the tool with the goal of making the tool practical and useful within community pharmacies. The finalized tool will be distributed to the Pennsylvania FtP practice transformation coaches, who will then utilize the tool at their assigned pharmacies. Coaches will be surveyed via Qualtrics on the usability of the tool, and then invited to provide feedback on a monthly coach webinar that will be audio-recorded. Descriptive statistics will be used to quantify numerical and categorical survey responses and content analysis will be conducted on open-response questions. Survey results and coach feedback will be used to further refine the assessment tool for future use.

Results: Research in progress. There are over 20 coaches assisting with the transformation of 40 Pennsylvania pharmacies. The tool

has been finalized and will be sent to the coaches for implementation within the first month of the 2-year FtP program which begins October 1, 2019. Data collection and analysis are ongoing.

Conclusions/Implications: Community pharmacy practices are seeking new ways to implement sustainable, patient care services. This project will produce a tool that Pennsylvania pharmacies can use to assess their readiness for practice transformation. The data gathered through this project will allow us to further refine the tool to share broadly for use nationwide.

375-Opioid Safety: Community Pharmacy Interventions to Prevent Opioid Adverse Drug Events. Jacobs D, Lu C, Bednarczyk E, Wahler R, Feuerstein S, University at Buffalo School of Pharmacy and Pharmaceutical Sciences, Myrka A, Anderson C, Thomas J, Vadala T, Atlantic Quality Innovation Network. Email: dmjacobs@buffalo.edu.

Objective: Reducing adverse drug events, particularly those attributed to opioids, is a top national priority. In most states, trained pharmacists are allowed prescribing authority of naloxone via standing order for patients at risk for opioid overdose. Although most pharmacists now have access to naloxone dispensing authority, implementation of pharmacy-based naloxone programs is not optimal and pharmacists are under-utilized within efforts to address the opioid crisis currently affecting the United States. The aim of this study was to implement in community pharmacies evidence-based standardized opioid pharmacist-patient counseling ("advanced" counseling) in combination with direct patient-and opioid prescriber-level interventions, including naloxone offer to patients, to decrease the risk of opioid-related adverse events.

Methods: This was a quality improvement study utilizing a quasi-experimental design conducted from 9/2017 to 9/2019. This project was facilitated by the Atlantic Quality Innovation Network (AQIN), the Centers for Medicare & Medicaid Services-designated QIN-QIO for New York, South Carolina and the District of Columbia, working along with volunteer community pharmacies. The community pharmacies deployed standardized opioid pharmacist-patient counseling clinical decision support into pharmacist dispensing workflow electronically. Participating pharmacists were educated on the standard opioid counseling via continuing education programs and were provided standard opioid counseling tools. The outcomes included the change in pharmacist knowledge, naloxone prescriptions dispensed, and opioid-related healthcare utilization including hospitalizations or emergency department visits. Outcome measures were evaluated at the pharmacy level using Medicare Fee for Service claims data. Rates are presented as healthcare outcomes per 1,000 persons with an opioid claim and were estimated based on normal distributions. A two-rate chi-square was used to evaluate differences between the pre and post periods.

Results: Over the study period, 17 community pharmacies were enrolled into the study and implemented an opioid enhanced counseling intervention. Rates of naloxone prescriptions increased between the pre and post periods from 3.9 to 15.3 per 1,000 persons prescribed an opioid (rate difference: 11.4, 95% CI: 4.51, 18.3; $p<0.0001$). This was driven primarily by a post-implementation spike in naloxone prescriptions within 1 month of intervention implementation in South Carolina (pre-intervention, 2.68 vs. post-intervention, 47.3 prescriptions per 1,000 persons; $p<0.0001$). The overall rate of opioid-related healthcare events remained similar between the pre-intervention and post-intervention periods (12.9 vs 16.1 events per 1,000 persons; rate difference: 3.06, 95% CI: -4.76, 1.09; $p=0.43$). Pharmacists had an overall 18 percentage point increase (68%pre-test vs 86% post-test) in test scores pertaining to knowledge of advanced opioid dispensing and an 11 percentage point increase for knowledge about naloxone dispensing (82% pre-test vs 93% post-test).

Conclusions: The complex opioid intervention was successfully implemented in community pharmacies in New York, South Carolina, and the District of Columbia. Progress improvements show evidence of increased patient acquisition of naloxone from pharmacists and an increase in pharmacist knowledge regarding advanced opioid counseling. Though there were no significant differences for the overall rate of opioid related healthcare events. With longer follow-up time and a larger sample size, there is a likelihood of impact on these clinical outcomes.

376-Community-Based Pharmacy Utilization of the Pharmacist eCare Plan Standard: A Retrospective Review. Jindal N, UNC Eshelman School of Pharmacy | Moose Pharmacy, Clifton C, Trahms K, Howe A, Moose W, Branham A, Moose J, Moose Pharmacy, Roberts K, CPESN USA, Rhodes L, PGY1 Community-based Pharmacy Residency Program. Email: nimit@moosepharmacy.com.

Objective: Community-based pharmacists play an important role in providing patient-specific interventions. Realizing a need for a standardized process for patient care interventions, the Joint Commission of Pharmacy Practitioners developed the Pharmacists' Patient Care Process (PPCP). A significant part of the PPCP is documentation of a patient's overall health goals in order to achieve optimal care. The Pharmacist eCare Plan is a longitudinal patient-specific plan that tracks a patient's concerns, goals, interventions, and medication related-information captured by all members of the patient's health care team. The Pharmacist eCare Plan Standard requires pharmacies to detail a patient's current medication regimen and health concerns, as well as the pharmacy's interventions and patient's health outcomes over time. The eCare Plan Standard utilizes SNOMED CT codes (Systemized Nomenclature of Medicine Clinical Terms codes) as a universal language for documenting interventions. CPESN USA (Community Pharmacy Enhanced Services Network USA) is focused on incorporating the Pharmacist eCare Plan Standard within pharmacy software vendors. The objective of this study is to conduct a pilot evaluation of the Pharmacist eCare Plan utilization and documentation of SNOMED CT codes within select community-based pharmacies.

Methods: This retrospective study will occur at six locations of an independent community pharmacy in North Carolina. Qualitative data will be derived from Pharmacist eCare Plans for patients enrolled in a medication adherence program. Data will be included in

the analysis if the plan includes a free-text note and was submitted from August 1, 2019 to October 31, 2019. Study procedure includes three steps: (1) Review of free-text notes to identify medication-related problems and associated interventions, (2) Comparison of medication-related problems and interventions with SNOMED CT codes available within the Pharmacist eCare Plan Standard, and (3) Classification of medication-related problems and interventions. Three classification categories will be utilized: (A) No Further Action: A corresponding SNOMED CT code exists within the Pharmacist eCare Plan Standard, (B) Code Available: A corresponding SNOMED CT is not listed within the Pharmacist eCare Plan Standard but is available in the International SNOWMED Browser, or (C) Emerging Code: A corresponding SNOMED CT code is not listed within the Pharmacist eCare Plan Standard and is not listed in the International SNOMED Browser. Data compiled will include: the most frequently identified interventions and medication-related problems, SNOMED CT codes that required retrieval from the International SNOMED Browser, and interventions that require development of new SNOMED CT codes. Descriptive statistics will be utilized for data analysis.

Preliminary Results: Institutional Review Board approval is anticipated in November 2019. Data collection and analysis will occur from December 2019 to February 2020.

Implications/Conclusions: Pharmacist eCare Plans are a growing area of emphasis within community-based pharmacy as they articulate a standardized method to collect clinical data and validate the role of the pharmacist. By sharing data with CPESN USA and other stakeholders, this study will help identify emerging patient care services being conducted in community-based pharmacy, guide future Pharmacist eCare Plan documentation, improve methods for collection or assessment of clinical data, and define additional roles for pharmacists in direct patient care.

377-Using a Performance Dashboard to Facilitate Practice Transformation in Pennsylvania Community Pharmacies. Kuhn M, Stewart P, Yawny A, McGivney M, Carroll J, Turco E, Cothrel S, University of Pittsburgh School of Pharmacy. Email: mdk61@pitt.edu.

Objective: The objective of this project is to create a pharmacy performance dashboard based on patient encounter documentation data that will be used by peer coaches to guide pharmacies' progress in "Flip the Pharmacy" (FtP). FtP is a nationwide, scalable community pharmacy practice transformation effort supported by the Community Pharmacy Foundation and led by CPESN-USA to transform community pharmacy practice from a traditional, prescription-driven model to a patient-centered care model. This program utilizes peer coaching and data-driven milestones to measure pharmacy transformation progress. In Pennsylvania, there are over 20 coaches paired into 12 teams supporting 40 community pharmacy locations, which are all members of Pennsylvania's community pharmacy enhanced services network: the Pennsylvania Pharmacists Care Network (PPCN). Coaches will guide pharmacy teams through "Change Packages" and hold them accountable to program goals and milestones.. All patient encounters counting towards program goals will be electronically documented utilizing the Pharmacist eCarePlan. The goal of this project is to create a performance dashboard that summarizes pharmacy progress in FtP, specific to Pennsylvania pharmacies and patient care opportunities, for use by peer coaches and the pharmacy staff at each pharmacy in order to track and inspire transformation progress.

Methods: This qualitative study will elicit stakeholder perspectives to inform the design and implementation of the performance dashboard. A telephonic focus group format will be used to collect data during monthly conference calls with Pennsylvania's FtP coaches. Up to three focus groups will be conducted. First, sample performance dashboard reports will be created based on available PPCN Pharmacist eCarePlan program performance data, payer contract opportunities in Pennsylvania, and community patient care opportunities. The sample dashboard will be shown to coaches prior to each focus group. Investigators will use a semi-structured interview guide, informed by the Technology Acceptance Model, to collect coach feedback on the content of the performance dashboard report and its perceived usefulness and ease of use. The calls will be audio-recorded and transcribed for analysis. A mixed deductive-inductive content analysis of the focus group transcripts will be conducted by the research team. Member checking, the process of verifying the content analysis results with focus group participants, will be used to rapidly validate the investigator interpretation of the data. Results will be used to refine the performance dashboard. This process will be repeated for subsequent focus groups.

Results: Focus groups are scheduled to occur between October 2019 and February 2020.

Implications: This project will provide detailed insight on the construction and use of a pharmacy-specific dashboard documenting performance, and local patient care opportunities. The intent is for this tool to aid in implementation of new and useful clinical services in community pharmacies. The results of this study can inform the development of performance and opportunity dashboards by other community pharmacies, CPESN and other FtP practice transformation teams nationwide.

378-Impact of Pharmacist Recommendations for Asthma Management in a University Health Setting. Lambert G, Higginbotham S, Duquesne University School of Pharmacy, Larson P, Duquesne Universoty Health Services, Generalovich N, Mrvos D, Duquesne University Health Services. Email: lambertg@duq.edu.

Objective: Asthma is a common chronic health condition in the United States that can cause significant limitations to a patient's daily activities. Pharmacists are a group of healthcare providers that can work with physicians to improve the care of patients with asthma. The goal of this study is to assess the effect of pharmacist recommendations for asthma management and inhaler techniques on lung function and asthma control in a university health clinic.

Methods: Pharmacist led asthma disease state management visits with patients under a physician-approved protocol will present for

care. Participants will include individuals age 18 or older with a diagnosis of asthma. Spirometry will be performed to assess lung function and questionnaires such as the asthma control test (ACT) and inhaler technique checklists will be administered to assess asthma control. Data points collected will include forced expiratory volume at one second (FEV1), forced vital capacity (FVC), the FEV/FVC ratio, ACT assessment scores, and inhaler technique. Success of the intervention will be tracked by comparing baseline lung function and asthma control at the beginning of the study period with lung function at the end of the study period. Data will be tracked in the electronic health record (eHR) and analyzed using inferential statistical tests.

Results: Research in progress.

Conclusions: The results of this project will be used to identify ways in which pharmacists may be able to add value to patient care and help expand access to care for patients in the university setting. This information could be used more broadly in the discussion of the pharmacist's role in primary care.

379-What's The Word? Defining Community Pharmacy Interventions. Laughlin E, Lynch S, Binghamton University School of Pharmacy and Pharmaceutical Sciences, Mayer D, Thomas Jefferson University's School of Pharmacy. Email: elaughl1@binghamton.edu.

Objective: The role of the community pharmacist within the healthcare system is vital. As healthcare moves towards value based payments it is important that their contributions are fully realized. One barrier to proving this value is the lack of a standardized system to track and capture the types and quantity of interventions made by community pharmacists. While some other areas of the pharmacy profession have clear processes and formats for documenting medication interventions, community pharmacy lacks a universal intervention tracking tool. There are several reasons for this lack of structure in documenting interventions, including the inability for many community pharmacies to communicate electronically with other healthcare entities. In addition, the pharmacy profession as a whole lacks standardized definitions for what each specific intervention entails. This can create challenges in documentation, communication, and billing. Several groups have attempted to provide insight into common definitions, but their effort to streamline the process effectively demonstrates that each pharmacist uses slightly different wording to convey the action or service that was performed. The primary objective of this project is to determine whether pharmacists are consistently able to categorize interventions. The secondary objective is to determine themes in situations that are not easily categorized. This information will be used to create a documentation and reporting tool that will be used by pharmacy students to track their interventions on experiential rotations.

Methods: A survey was developed to assess the ability of pharmacists and students to categorize assigned case studies into interventions according to a standard set of definitions. The set of definitions was developed based on examples found in the literature. The study team developed 32 case scenarios representing common situations to the community pharmacy setting. Each study team member individually coded the scenarios to all applicable interventions. A mixture of cases coded to multiple interventions and those coded to a single intervention were used for the survey. Surveys will be sent to affiliated university preceptor listservs and local pharmacy organizations. Responses will be collected and results will be compared to expected answers coded by the study team.

Results/Preliminary Results: Results in progress, pending IRB approval.

Implications/Conclusions: The results of this survey will be used to determine whether the surveyed population is capable of categorizing interventions consistently. These results will be used to develop the categories included in a tracking tool for student use on experiential rotations. The goal of this tool will be to provide students with an easy way to record their interventions in order to document impact and reinforce the value of pharmacist provided services. On a bigger scale, the ability of pharmacists to use common definitions is important because different interventions may be tied to different potential outcomes, which can affect reimbursement rates. If pharmacists are unable to commonly categorize their actions in order to document their interventions in a standardized manner, this could mean that further training in this area of documentation is needed in pharmacy school or beyond.

380-A Systematic Review and Meta-Analysis of Impact of Interprofessional Team-Based Care on Hypertension Outcomes in Primary Care. Lee J, Fazel M, Cooley J, Slack M, University of Arizona College of Pharmacy, McCutcheon L, Wilkes University Nesbitt School of Pharmacy, Saleh A, University of Arizona Health Sciences Library. Email: jlee@pharmacy.arizona.edu.

Objective: Interprofessional team collaboration is recognized as being central to optimal patient care in primary care settings. Yet, there is limited evidence of such team-based care positively affecting patient-oriented health outcomes. We conducted a systematic review and meta-analysis to examine the effects of interprofessional team-based care on outcomes in adult patients with hypertension.

Methods: A systematic review of literature was performed for studies published in English between January 2013 and March 2018 using the following databases: Ovid MEDLINE; Ovid IPA; Embase.com Embase; Wiley Cochrane Library; Scopus; Clarivate Analytics WOS Science Citation Index Expanded; EBSCOhost CINAHL Plus; FirstSearch OAIster; AHRQ PCMH Citations Collection; ClinicalTrials.gov, and HSRProj. This dataset was combined with a set identified by a previous scoping review with literature search that included publications from 2000 to 2013. We included comparative studies conducted in primary care settings that provided interprofessional care, involving three or more professions, to adult patients with hypertension. Screening and data extraction were conducted by dual independent reviewers. Study and patient characteristics, interprofessional team make up and function, and

outcomes data for meta-analyses were collected. The primary outcomes included systolic blood pressure and diastolic blood pressure. Forest plots were constructed reporting the standard mean differences based on a random effects analysis of interprofessional team care versus comparison/usual care. Funnel plots were constructed, and I2 and Kendall's Tau were calculated. The a priori alpha level was 0.05.

Results: We screened 3,543 records during the initial title/abstract review, and 182 records were screened during the abstract/full text review. Of the 45 articles included in the systematic review data extraction, 12 studies were included in the meta-analyses of the hypertension outcomes. The sample size of included studies ranged from 41 to 20,524 and mean age ranged from 51.3 to 67 years with all studies reporting both systolic and diastolic blood pressure outcomes. All studies were conducted in primary care settings with varied interprofessional team make up and function, in which physicians, nurses, nutritionist/dietitian, behavioral health provider/psychologist/psychiatrist, and pharmacists were the most frequently involved professionals. Of the 12 included studies, 4 were randomized controlled trials, another 4 prospective cohort studies, 3 pre-post studies, and one retrospective cohort study using a large database. Meta-analyses conducted for systolic blood pressure and diastolic blood pressure found significant differences favoring interprofessional team care over the comparison/usual care (standardized mean difference [SMD] = 0.20, $p< 0.005$ and SMD = 0.18, $p<0.005$, respectively). I2 was 70% for systolic blood pressure and 76.6% for diastolic blood pressure. There was no indication of publication bias; Kendall's tau was 0.17 for systolic blood pressure and 0.58 for diastolic blood pressure with no visual evidence of bias in the funnel plot.

Conclusions/Implications: Team care involving three or more professions has favorable effects on systolic blood pressure and diastolic blood pressure among primary care adult patients. Interprofessional team-based primary care should be provided to patients with hypertension.

381- Development and Implementation of a Standard Operating Procedure for the Administration of Long-Acting Injectable Antipsychotics in a Community Pharmacy Setting. Li L, Harris D, Li L, H-E-B Pharmacy/University of Texas at Austin Community Pharmacy Residency. Email: lumengli@utexas.edu.

Objective: To detail the process of creating a standard operating procedure for the administration of long-acting injectable antipsychotics by pharmacists in a community pharmacy setting. Setting: Community pharmacy practice in Austin, TX (H-E-B Pharmacy)

Background: Administration of long-acting injectable antipsychotics is commonly performed by nurses and physicians. However, limited hours and lack of access and transportation can hinder adherence to monthly injections. Ease of access to community pharmacies and increased hours of operations compared to physicians' offices can help patients improve compliance with their injectable antipsychotics. Development of a standard operating procedure (SOP) for the administration of long-acting injectable antipsychotics by pharmacists requires several key steps including (1) determining method of reimbursement, (2) contacting representatives of companies with programs in place that allow for pharmacist reimbursement, (3) patient procurement, (4) determining physician/prescription requirements, and (5) data collection. Implementation involves selecting appropriate pilot pharmacies, developing a training module for pharmacists, and working with each program to procure patients for administration. A total of 5 stores were chosen as pilot stores with a preliminary goal to administer at least 2 injections each month. Impact of this new SOP will be evaluated over the course of 1 year. Evaluation will include the number of administrations completed, whether or not reimbursement is received for each administration, and pharmacist comfort with receiving prescriptions, scheduling appointments, and administration.

Results: Research in progress.

Conclusion: Research in progress.

382- Evaluating Patients' Needs for Pharmacist-Provided Patient Care Services in the Community Pharmacy Setting. Manzi G, Albertsons Company, Clough C, Cross C, Jewel Osco Pharmacies, Drambarean B, University of Illinois Chicago College of Pharmacy. Email: gina.manzi@albertsons.com.

Objective: The primary objective is to evaluate patients' perceived needs for pharmacist-provided patient care services at their current community pharmacy. The secondary objectives are to assess patients' awareness of patient care services currently offered at their current community pharmacy; to compare the perceived needs for patient care services of exclusive grocery store customers versus customers also currently utilizing the grocery store's pharmacy. There is presently a gap in pharmacy publications addressing patients wants and needs from their local community pharmacists. There is literature and studies assessing patient's satisfaction or perception of current pharmacy services offered but there is not literature directly involving patient's personalized needs specific to the developmental stages of pharmacy services.

Methods: A survey containing single-response, multiple-response, and open response questions will be distributed throughout six Jewel-Osco pharmacies. Four pharmacies will be urban in nature with two located in suburban towns. Distribution of surveys will occur at the pharmacy as well as at tables located in the grocery store. Pharmacy team members will be trained to offer a survey at each patient encounter; this includes both at drop off and pick up. Grocery store customers will be offered a survey upon entrance into the store via the principle investigator stationed at a table placed strategically within the store at high traffic areas for optimal

engagement. Throughout the data collection stage there will be designated weekend times in which free blood pressure screenings will be offered at a table strategically placed in the grocery store and surveys will be offered during this time to participating consumers. Surveys will be anonymous in nature. Surveys will be offered in paper as well as electronic form dependent on patient preference. The electronic version of the survey will be available through a QR code that may be scanned by consumers if they choose to participate electronically. Survey questions are designed to assess consumers baseline knowledge of pharmacy services and then assess what services they would utilize if offered at the pharmacy. Objectives will be evaluated through statistical analysis of response garnered via surveys. Data and statistical analysis will be appropriate with respect to the type of data collected. Categorical and ordinal data will be presented through contingency tables. Descriptive statistics will be utilized to analyze and sort finalized data.

Preliminary Results: This research is currently in progress.

Implications: Evolving healthcare into personalized medicine starts with understanding patients and their own goals. We can enhance patient care by offering services that patients feel they need to help them receive more comprehensive and individual, personal care. If new services offered have been directly requested or garnered from patient needs, there will be more involvement and motivation from patients and therefore better patient outcomes.

383-Initial Assessment of the Iowa Medication Complexity Score (IMECS). McDonough A, University of Iowa, Deninger M, McDonough R, Towncrest Pharmacy. Email: aaron-mcdonough@uiowa.edu.

Objective: To compare the new Iowa Medication Complexity Score (IMECS) to the standard Medication Regimen Complexity Index (MRCI) for a sample of patients of a community pharmacy. Community pharmacists are evolving to provide enhanced clinical services to patients with complex disease states to improve the quality of care of each patient. Pharmacists can utilize a risk stratification approach to classify their patients into strata to receive different levels or types of services.

Methods: As part of a service intended to reduce medication complexity, the IMECS was developed to sort patients based on complexity. The Iowa Medication Complexity Score (IMECS) is an unweighted sum of five factors calculated from a 180-day lookback period: 1) number of unique dates of dispensing, 2) number of different dosage forms for medications dispensed, 3) number of high-risk medications dispensed, 4) number of unique medications dispensed, and 5) number of different prescribers of the dispensed medications. The IMECS was calculated automatically in the pharmacy's clinical record and dispensing system. The MRCI is a weighted combination of three components: 1) number of times a day medication is taken, 2) number of different dosage forms, and 3) number of times special directions are present. This score was calculated manually using data drawn from the pharmacy dispensing system at the same time periods the IMECS values were calculated. Retrospective analyses used pharmacy patient records to calculate both medication complexity scores for a stratified random sample of patients for 2-month baseline and 9-month treatment period. At baseline, the sample included 25 from the low-risk group (IMECS<25), 40 from the medium-risk group (IMECS 25-40), and 60 from the high-risk group (IMECS>40). The mean differences in pre-vs. post measures were calculated and tested for statistical significance using paired t-tests. In addition, the correlation between the baseline values of both complexity scores were calculated and tested for statistical significance. Cronbach alpha for the baseline score of the IMECS was calculated. Finally, the number of medication-related problems (MRPs) identified for all patients (n=1,019) receiving the complexity service during the 9-month treatment period were compared across the three strata of medication complexity created by the IMECS values.

Results: The IMECS was compared to the MRCI for a sample of 113 patients. Using paired t-tests, the MRCI showed a non-significant ($p=0.74$) change from baseline to treatment period (25.8 vs. 25.5), while the IMECS showed a significant ($p<0.01$) decrease from baseline to treatment period (38.0 vs. 29.3). The two different measures correlated significantly ($r=0.76$ at baseline, $r=0.78$ during treatment). The Cronbach alpha for the baseline IMECS was 0.68. For the 9-month treatment period, the number of MRPs/100 patients differed in the three complexity categories: high=1,717.6, medium =1,270.9, low=787.9.

Conclusions: This initial assessment shows that the IMECS is reliable, sensitive to pharmacist services and demonstrates validity for identifying differences in patient medication complexity. As pharmacists move into population health management, having tools such as IMECS will be key for sorting patients to receive appropriate services. Future use of the IMECS at other community pharmacies is encouraged.

384-Pharmacy Emergency Preparedness and Evacuation "Bug-Out-Bag": A Descriptive Study. Merlo K, Jackson A, Brown M, Hiolhiol E, Eppich C, Conlin A, University of Utah College of Pharmacy. Email: kelsey.merlo@pharm.utah.edu.

Objective: The goal of this study is to determine the typical patient medication/fluid needs for 24 hours in the setting of an emergency evacuation, and create an ideal set of standard medications and fluids for patients to take to an alternate care site. While emergency preparedness is a necessary element of any healthcare institution, evidence regarding the composition of emergency response kits for evacuating patients is currently lacking (1). In the state of Utah, an earthquake of 6.75 magnitude or above is expected to occur at any time (2). In response, an appropriate and cost-effective emergency bag should be considered a requirement of all hospitals. In the setting of any disaster, evacuation needs to be conducted quickly. Ideally, the receiving institution is another hospital, however, when that is not feasible, patients may be redirected to nursing homes or gymnasiums. These modified locations are not typically suited for the influx of hospitalized patients or their pharmaceutical needs. This study aims to assess fifty de-identified patients from a local hospital by analyzing patient medications and fluid needs for the next 24 hours. We hope to compile the ideal set of standard medications patients would take to an alternate care site, describe the ideal transport mechanism, and create instructions, cautions,

and safety information for the use of these emergency kits. We ultimately hope to disseminate these findings to other institutions to support pharmacists in providing safety and care for patients when a disaster strikes.

Methods: This will be a descriptive study to document and communicate the current medication and fluid needs of a typical patient. A list of the most common diagnoses, medications, and fluid needs from the past year will be obtained and information from FEMA Disaster Medical Assistance Team and the National Center for Disaster Preparedness will be cross-referenced to decrease regional or institutional bias of medications, diagnoses, or methods used. With this collective information, a list of medications and fluids will be compiled into a rapid response kit.

Preliminary Results: Based on the World Health Organization's essential medicine list, we expect each emergency kit to treat the major non-communicable diseases, namely hypertension, cardiac conditions, diabetes, chronic respiratory diseases, and a selected set of mental health and neurological diseases (3).

Implications/Conclusions: We plan to disseminate our findings to other pharmacies and institutions. References: 1. Ozeki K, Ojima T. Current Status of Disaster Preparedness of Pharmacies and Differences in Disaster Awareness Based on Pharmacy Size. Disaster Med Public Health Prep. 2019;13(4):753-7. 2. Damaging earthquake probability in Utah is roughly 50 percent over the next 50 years. DPS Emergency Management. Published 2019. Accessed October 1, 2019. 3. Standard emergency health kits. World Health Organization. Published August 8, 2019. Accessed October 1, 2019.

385-Assessment of Iranian Student Pharmacists' Empathy Using Jefferson Scale of Empathy-Health Profession Students (JSE-HPS). Mirzayeh Fashami F, Mahan Business School, Tehran, Iran, Nili M, Department of Pharmaceutical Systems and policy, West Virginia University, Morgantown, Wv, USA, Karimpour Khamaneh D, Islamic Azad University, Pharmaceutical Science Branch, Tehran, Iran, Hemati H, College of Pharmacy, Tehran University of Medical Science, Tehran, Iran, Vasheghani Farahani A, Pharmaceutical Management and Economics Research Center, University of Medical Science, Tehran, Iran. Email: Fatemeh.mirzaei@sbmu.ac.ir.

Objective: The main objective of this study was to evaluate the reliability and validity of Persian version of Jefferson Scale of Empathy-Health Profession Students (JSE-HPS) among student pharmacists in Iran. Similar to the American Association of Colleges of Pharmacy (AACP), the Iranian Council for Pharmacy Education (ICPE) recognize the importance of training student pharmacists who are able to display empathy during interactions with patients. ICPE recommended all pharmacy schools to include empathy as a learning outcome of all communication courses for Doctor of Pharmacy (PharmD) students. Despite of this recommendation, the literature lacks studies measured the empathy among pharmacist students in Iran. For measuring empathy, the Persian version of JSE-HPS exist although the reliability and validity of JSE-HPS have not assessed among pharmacist students in Iran.

Methods: A cross-sectional survey design study was conducted from April 2019 to June 2019 in five pharmacy schools in Iran. A convenient sample of 504 student pharmacists participated in this study. All the participants were in their fourth, fifth, and sixth year of PharmD program. Data were collected by using Persian version of JSE-HPS questionnaire distributed to the participants in their classrooms. This survey instrument is a 20-item self-administered questionnaire on a 7-point Likert scale (1=strongly disagree, 7=strongly agree). Exploratory factor analysis (EFA) by using principal component analysis and varimax rotation was used to identify underlying components. A rotated loading factor of 0.4 was chosen as the minimum salient rotated factor loading. Reliability was examined using Cronbach's alpha. T-test and one-way analysis of variance (ANOVA) were used to investigate the difference in means of empathy between different groups of background factors. All tests were two-tailed at 95% confidence level. Data were analyzed by using Statistical Package for Social Sciences (SPSS) version 23.0.0.0 .

Results: 496 received questionnaire were eligible for the analysis. The Kaiser-Meyer-Olkin overall index was 0.877. The Bartlett's test for sphericity was significant ($p<.01$). The PCA extracted three components of "Compassionate Care", "Perspective Taking" and "Standing in the Patients' Shoes" accounted for 44.75% of the total variance. The reliability of these three components were 0.83 (Compassionate Care), 0.77 (Perspective Taking), and 0.68 (Standing in the Patient's Shoes). Following item removal, 18 items remained. The overall internal reliability of the JSE-HPS with eighteen-items was good with Cronbach's alpha of 0.85. The mean score of empathy level was approximately 96 (ranging from 18 to 126). Majority of participants in this study were between 22 and 25 years old (84.98%), female (75.41%), single (87.12%) and attended in public pharmacy schools (60.08%). The participants were in their fourth year (49.49%), fifth year (35.58), and sixth year (14.93%) of PharmD program. Empathy score was significantly higher in female student pharmacists ($p<.01$).

Implications/Conclusions: This study found the Persian version of JSE-HPS fitted best to a three-component model using eighteen items. The results of this study suggest that the eighteen-item, three-component solution has excellent psychometric properties among Iranian student pharmacists. Future research could use eighteen-item measure to investigate the role of empathy among student pharmacists in Iran.

386- Impact of Patisiran use in Patients with Hereditary Transthyretin-Mediated Amyloidosis within Ambulatory Care and Home Infusion Services. Pennock D, Blackwell J, Canfield S, Grimes M, Sherman B, Wolff S, Marsh C, Hirsch D, Johns Hopkins Home Care Group, Polydefkis M, Johns Hopkins Medicine. Email: dpennoc1@jhmi.edu.

Objective: The purpose of this project is to evaluate the clinical and operational impacts of patisiran in patients with hereditary transthyretin-mediated amyloidosis, and to ultimately identify and develop targets for improvement to optimize the care process for

patients receiving patisiran. Hereditary transthyretin-mediated amyloidosis (hATTR) is a progressive and often fatal disease caused by misfolded transthyretin protein which builds up in organs and tissues and results in the hallmark symptoms of polyneuropathy and/or cardiomyopathy. Patisiran is a new gene silencing therapy that works by eliminating the production of mutant transthyretin by degrading messenger RNA and decreasing protein expression. Patisiran is an intravenous infusion that was approved for the treatment of polyneuropathy related to hATTR. Upon patisiran's FDA approval in August 2018, services within home infusion and ambulatory infusion suites were rapidly implemented to transition Phase III clinical trial patients to commercial therapy, as well as accept new referrals for care. The need to rapidly begin servicing these patients mandated a quick turnaround in developing the patisiran program. As a result, standardized processes for evaluating the new service were not proactively identified including evaluation of details related to administration of therapy, patient persistence to therapy, reasons for discontinuation, and clinical outcomes measures. Specific responsibilities for the monitoring and evaluation of clinical outcomes by care team members were also not identified. This project seeks to evaluate and quantify these impacts, as well as identify and develop targets for improvement to optimize the care process for patients receiving patisiran.

Methods: All patients with hATTR referred for patisiran treatment for polyneuropathy from August 2018 to June 2019 will be included for evaluation of speed to therapy and disposition. The timeframe in which patients were initiated on therapy or transitioned from the clinical trial will be evaluated using dispensing records, referral intake data, and manual chart review. Patient persistence to patisiran infusion therapy and reasons for discontinuation of treatment will be assessed for patients referred from August 2018 to February 2019 using patisiran dispensing data and manual chart review. The current processes for monitoring of clinical outcomes will be characterized, and the impact of patisiran therapy on clinical outcomes, where available, will be described.

Results: Research in progress.

Implications: This project highlights the clinical and operational impacts of patisiran on a large academic health system's home and ambulatory infusion services. Project findings may establish a model process for the evaluation of future service implementations for high-cost specialty infusion drugs.

387-Improving the Health of South Dakotans through the Prevention and Management of Diabetes, Heart Disease, and Stroke: Practitioner Perspective. Pinto S, Schrempp M, South Dakota State University College of Pharmacy and Allied Health Professions, Hawkins-Taylor C, Xavier University. Email: sharrel.pinto@sdstate.edu.

Objective: This project aims to identify barriers of South Dakotans with diabetes and Cardiovascular disease (CVD) as it relates to medication therapy management (MTM) and pharmacy's role in patient care. Access to healthcare facilities and services is a major barrier. While rural patients in the state may travel more than 50 miles for a short visit with a primary care provider (PCP), 30% of the population commutes 15 minutes to the nearest pharmacy. Pharmacists also have the advantage of seeing patients more frequently than PCPs, allowing them to provide necessary care for rural patients. Pharmacists in particular tend to be under-utilized and may be of significant benefit to those who reside in areas where traditional healthcare facilities are not available.

Methods: There were three major stakeholder groups in the study: patients, practitioners, and payers. This paper will focus on practitioners, which included pharmacists, physicians, diabetic educators, and advanced practice providers (APP). Recruitment focused on practitioners with an active practice in SD caring for patients with diabetes and CVD. The project team contracted with Connect US Health and Eagle One to recruit and screen participants in this group. Practitioners were then assigned to focus group (FG) or elicitation interview (EI) sessions. These semi-structured sessions were led by a facilitator and assistant and audio recorded. EI sessions were conducted using Zoom in order to be respectful of practitioner time and commitments. FG sessions were conducted in-person. Audio recording sessions were de-identified, transcribed, and analyzed using NVivo for thematic analysis.

Results: Fifty six practitioners participated, including pharmacists (n=35), APPs, (which included physician assistants and nurses [n=4] and dietitians [n=11]), diabetes educators (n=5), and physicians (n=1). There is a general lack of understanding, among non-pharmacy practitioners, of the different roles of the pharmacists across various settings. A majority of pharmacists' report offering MTM services to patients, but it is unclear if all aspects of these services are implemented every time, they see an eligible patient. Pharmacists also expressed a desire to receive additional MTM certification and training on offering enhanced services such as medication packaging and synchronization. A number of practitioners identified the challenge of making health care and preventive services affordable to patients. Additional barriers included lack of time, inadequate staff, and proximity to other providers. Four of the major goals of providers for practice within the next 5 years aligned well with patient needs. These goals included increase ability to meet needs of low-income patients, increase use of diabetes education programs, increase referrals to weight management, increase medication adherence, and completion of MTM.

Conclusions: Providing MTM training to pharmacists and offering educational sessions to other members of the health care team on the varying roles of the pharmacists will help meet practitioner goals and improve patient outcomes. To overcome areas of patient need and corresponding care gaps identified by practitioners, year two efforts of this five year project will focus on developing or facilitating development of services for pharmacies, integrated delivery networks, primary care clinics, FQHCs and other organizations

across the state.

388-Advancing the Role of Pharmacy Technicians in Point-of-Care Testing Service Delivery in the Community Pharmacy Setting Using a Standardized Training Program. Pope S, UTHSC | The Kroger Company -Delta Division, Hohmeier K, University of Tennessee Health Science Center, Desselle S, Applied Pharmacy Solutions, Ward K, King Soopers / City Market & Kroger Health, Cardosi L, Hill H, Wasson M, Henson L, McKnight C, Kroger. Email: s_pope15@outlook.com.

Objective: The primary objective of this study is to assess the impact of a standardized training model for technician-assisted point-of-care testing (POCT) on the number of wellness screenings performed. A secondary objective is to assess pharmacist, technician, and patient perceptions of advanced roles of the pharmacy technician in POCT service delivery.

Methods: Certified pharmacy technicians (CPhTs) across 37 states (pending state-specific regulations) of a large community pharmacy chain will engage in a POCT training program which features pharmacy technician-supported POCT. The training will consist of an online study plus in-person hands-on training and competency assessment prior to implementation into practice. CPhTs will be limited to the technical tasks of POCT (e.g., sample collection, quality assurance), while the pharmacist will perform tasks requiring professional judgement (e.g., assessment, planning, patient counseling). Data collection will occur over 3 months. Electronic surveys will be distributed to the pharmacists, technicians, and patients involved to gather perceptions on acceptability, appropriateness, and feasibility of the intervention's implementation. The surveys were based upon a framework in implementation science previously validated in the literature. This study is pending approval by the University of Tennessee Health Science Center (UTHSC) Institutional Review Board.

Preliminary Results: Results are pending and will be reported at the APhA Annual Meeting and Exposition in March 2020.

Implications: These results will aim to successfully scale this innovative practice through standardization, contributing to the enhancement of patient care services delivered at community pharmacies. Developing clear, supportive policies and training on these advanced roles for pharmacy technicians will facilitate success as community pharmacy is challenged to adopt these advanced roles.

389-Pharmacist Identification of Medication Related Problems During Physician Visits at a Federally Qualified Health Center. Puia A, Ginda A, Dellogono A, Holyoke Health, Dawson A, Massachusetts College of Pharmacy and Health Sciences. Email: alyssapuia@my.uri.edu.

Objective: This study seeks to quantify the impact pharmacists can have when they are embedded into provider care teams at a federally qualified health center (FQHC). The existing body of research has focused on integrating pharmacists in care teams to manage specific disease states such as hypertension, hyperlipidemia, and diabetes. In contrast, our research seeks to quantify the pharmacists' impact via identification of medication related problems (MRPs) in the management of any and all disease states a physician might encounter in the course of a typical day. Pharmacists embedded in the provider care team complete medication reconciliation, serve as drug information (DI) specialists, identify potential MRPs and propose recommendations to solve them. The primary objective of this study is to QUANTIFY the number and classify the types of MRPs identified. Secondary objectives include identifying which disease states the embedded pharmacists made the most recommendations for, identifying if differences in baseline patient characteristics correspond to a difference in MRP rates and quantifying the number and type of drug information requests answered.

Methods: A retrospective cohort study design will be used. During interprofessional visits, pharmacists documentED patient demographics and MRPs using a standardized Microsoft Infopath form. Study authors will retrospectively analyze these forms by exporting the de-identified cohort data into Microsoft Excel. Patient data are eligible for inclusion into the study if the patient is 18 years of age or older and presentED to an interdisciplinary pharmacist-physician medical visit at the FQHC within the past 5 months. Statistical analysis software (such as Microsoft excel or Graphpad Prism) will be used for the data analysis. The primary objective (number and types of mrps) as well as the secondary objectives of disease states that had the most mrps and number and type of di requests answered will be reported using descriptive statistics (reported as sums). The secondary objective investigating differences in baseline characteristics will be analyzed using a student t-test to compare nominal data. The goal of this analysis is to identify any differences in mrp rates between the following categories: male vs. female; adult vs. elderly; primary care vs. same-day care visit type.

Results Exempt – resident as primary author.

Implications/Conclusions: It is anticipated that the results of this study will support the practice of embedding pharmacists in primary care teams based on the number and types of mrps identified across a wide variety of disease states. In addition, the secondary analysis of differences in baseline characteristics may aid in identifying which visit types may benefit most from pharmacist integration for the purposes of identifying and rectifying mrps. This information will be useful to modify our own health center practices, but may also influence practices at other community health centers that follow a similar practice model.

390-Evaluation of an Accredited Training Program on Implementation of Point-of-Care Testing in Community Pharmacies. Rains L, Smith M, University of Arkansas for Medical Sciences. Email: LJRains@uams.edu.

Objective: The primary objective of this study was to evaluate the National Association of Chain Drugstores (NACDS) Point-of-Care Testing (POCT) training program's effect on implementation of pharmacy POCT services and barriers that may have prevented or

slowed implementation in the state of Arkansas. The secondary objective of this study was to evaluate the quality of the training program by asking participants to report their feelings of preparedness at both the conclusion of the training and once they began implementing POCT services on their own.

Methods: In July 2019, 57 pharmacists were contacted to participate in a survey project to evaluate the effectiveness of the NACDS POCT training program in the state of Arkansas. Questions consisted of a variety of response methods including multiple choice, select all that apply and Likert scale questions. The survey design, distribution and data capture was performed using the RedCap survey platform. The voluntary survey was available for approximately five weeks. Data was interpreted using descriptive analysis.

Results: A total of 25 pharmacists responded to the email invitation to participate in the survey. Eight email contacts were determined to no longer be valid, belong to former residents or faculty members who were unable to participate in the survey for a response rate of 51%. Approximately 48% of the participants surveyed reported that their pharmacy currently offers POCT services with Group A Streptococcus and Influenza screenings being the most popular tests. The most common greatest barrier to implementation was determining how to obtain treatment for patients who test positively (43% respondents). The majority of participants also reported feeling at least "very prepared" at the conclusion of the NACDS POCT training program. When the participants began implementing POCT services on their own 6 participants reported a decrease in preparedness, 2 participants reported an increase in preparedness, and the remainder felt equally prepared in both scenarios. Over half of the participants (52%) requested additional resources outside of what is currently provided by the NACDS training program. The most popular request was for example pharmacy protocols regarding POCT services.

Conclusion: The implementation rates and effectiveness of the NACDS training program discussed in this study will help improve the training and expand POCT services within the state of Arkansas. This study indicates that additional implementation strategies are needed in addition to the national training program. As pharmacies add clinical services outside dispensing product, training programs and other implementation strategies will become increasingly important. Future research across multiple states and years is needed to more accurately measure implementation rates nationwide.

391-Operation Immunization: The Impact of Student Pharmacist-Led Flu Clinics on Local Community. Rasheed S, Abidogun Z, Texas A&M University-APhA-ASP, Abdoh R, Texas A&M APHA-ASP, Thanawala S, Dunn K, Texas A&M-APhA-ASP. Email: shireenr@exchange.tamu.edu.

Objective: Our mission is to practice preventative medicine through flu vaccination administration and provide patients with the knowledge and resources to proactively make informed decisions about their own health. Many community residents are unaware that flu vaccines are easily accessible through their local pharmacy. By organizing flu clinics at diverse locations in Bryan-College Station, TX (BCS), we want to educate community residents on easily accessible and affordable health services that student pharmacists can provide to those individuals who may not have the means to frequently visit their primary care provider.

Methods: Established a partnership with two Walgreens locations to provide flu clinics in multiple diverse locations in the BCS area including the Texas A&M campus, a Hispanic festival, a local homeless shelter, a church, and a mosque. By doing this, we were able to reach a broad range of patients ranging from students, to university faculty and staff, professionals, and the general population.

Preliminary Results: As of September 15th, we have successfully administered 310 flu immunizations at four different clinics. There are a total of ten clinics planned thus far for the semester, and the final number of immunizations to be administered during this flu season is still pending.

Conclusions/Implications: By organizing flu clinics at several locations in the BCS area, we targeted many distinct socioeconomic backgrounds. Working with patients of diverse cultural and socioeconomic backgrounds has helped student pharmacists develop culturally sensitive communications skills to better individualize care and empower patients to take charge of their own health. Through collaborative effort, this initiative has served to expose students to the reality of pharmacy, and prepare them to serve a community with competence, compassion, and care, thereby implementing the core values of Texas A&M's Irma Lerma Rangel College of Pharmacy.

392-Community Pharmacists' Motivation and Barriers to Providing Patient Care Services and Billing Services Under AB 1114. Reyes L, Albertsons/UCSF, Kroon L, UCSF, Hong J, Hamper J, Lin C, Albertsons. Email: liesl.reyes@albertsons.com.

Objective: The primary objective of this study is to assess pharmacists' knowledge, intent, and barriers to furnishing medications and billing services under AB 1114 regarding self-administered hormonal contraceptives, nicotine replacement products (tobacco cessation), travel medications, routine vaccinations, and naloxone. Secondary objectives will evaluate motivating factors for providing patient care services within community pharmacies and identify action plans implemented to increase furnishing rates. California community pharmacists have expanded their scope of practice through Senate Bill 493 (SB 493) and Assembly Bill No. 1535 (AB 1535), which allow pharmacists to furnish the medications listed above. Additionally, California Assembly Bill 1114 (AB 1114) now provides pharmacist payment for patient care services provided to California Medicaid (Medi-Cal) beneficiaries. Provider status within California has been a progressive step for pharmacy practice but the provision of services and furnishing rates have not expanded substantially. This study will evaluate factors that motivate and hinder pharmacists from providing patient care services and billing them to Medi-Cal. Understanding pharmacists' perception will give insight on how to overcome barriers for providing services,

furnishing medications, and what can be done to streamline billing processes.

Methods: This survey-based observational study will be submitted to the UCSF Institutional Review Board for approval. The sample population will represent California community pharmacists that practice within chain, supermarket-based, and independent pharmacies. Pharmacists will be contacted through an email list obtained from professional pharmacy organizations and companies. The online-based survey will collect demographic information (age, gender, and ethnicity) and educational/employment background. Surveys will be distributed via email and incorporate questions regarding: 1. Readiness and intent to bill services under AB 1114 2. Practices and barriers regarding the furnishing of self-administered hormonal contraceptives, nicotine replacement products, travel medications, routine vaccinations, and naloxone. Questions will include Likert scale assessments to evaluate pharmacist knowledge, attitudes, and skills. Multiple-choice questions will be used to quantify average number of medications furnished per month. All participants that submit the survey are eligible to participate in a gift card raffle. Overall response rate will be reported and descriptive statistics will be used to report findings.

Preliminary Results (or Reports on Projects in Progress): Approval by the Institutional Review Board is anticipated for November 2019. Data will be collected from November 2019 through February 2020. Analysis of the data will occur in March 2019.

Implications/Conclusions: Conclusions will be provided upon completion of research.

393-Retrospective Evaluation of Preconception Care Intervention Opportunities in a Chain Community Pharmacy Setting. Roath E, SpartanNash, DiPietro N, Ohio Northern University -Raabe College of Pharmacy, Bright D, Ferris State University College of Pharmacy. Email: eric.roath@spartannash.com.

Objective: High cholesterol and high blood pressure historically affected patients in their 50s and 60s but now impact more patients in their 20s and 30s. This shift in demographics for these chronic diseases is particularly problematic among women of childbearing age as many of the medications used to treat them have the potential to adversely affect a developing fetus. However, there is currently no standard in pharmacy practice by which pharmacists routinely screen for or counsel patients about these issues or receive reimbursement for such services. Preconception care is a set of interventions to identify and reduce risks to a woman's health or pregnancy outcomes through prevention and management. Medication therapy management (MTM) is a process by which pharmacists target medication-or condition-specific counseling for individual patients to optimize health outcomes, and is a logical conduit for supporting preconception care. Through MTM, pharmacists can identify medications that may cause fetal harm and make recommendations to switch agents or ensure effective contraception use to avoid unintended pregnancy, as appropriate. The purpose of this study is to identify missed opportunities for pharmacists to provide preconception care support during MTM consultations in a supermarket pharmacy chain.

Methods: The study examined MTM and prescription drug claims submitted by a regional chain of supermarket pharmacies. Generally, patients qualify for MTM services if they are taking, at minimum, at least one medication for one chronic condition. Researchers reviewed all MTM claims submitted from January 1, 2018 to June 30, 2019 to identify female patients between the ages of 15 and 45 years who received MTM services during this period. Records were pulled for prescription drugs dispensed to these patients for analysis. Patients were included in the analysis if they were associated with at least one MTM service claim and had one medication dispensed by the pharmacy chain during the study period. Medications were categorized by agent and drug class, and those likely to cause fetal harm were identified. Prescription claims data were then processed through a Microsoft Access database which deidentified prescription claims data and linked the claims with individual patients who had received MTM services during the study period. The study was IRB-approved.

Results: A total of 2020 female patients were identified as having received MTM services and filled one or more medications at the pharmacy chain during the study period. Of these patients, 1,021 (50.5%) had at least one fill of a medication that would likely cause fetal harm. Examples of drug classes for these medications included angiotensin-converting enzyme (ACE) inhibitors, angiotensin receptor blockers (ARB), HMG-CoA reductase inhibitors (statins), methotrexate, non-steroidal anti-inflammatory drugs (NSAIDS), opioids, valproic acid and derivatives, and warfarin.

Implications/Conclusions: Over 1000 women of childbearing age who received MTM services at a regional pharmacy chain also filled at least one medication likely to cause fetal harm in an 18-month period. There is a need to develop reimbursable targeted interventions that pharmacists can deliver via MTM to optimize use of these drugs and/or ensure appropriate contraception to improve maternal and child health outcomes.

394-Assessment of a Pharmacist-Specific Medication Synchronization Enrollment Visit Training Program. Rutledge C, Fred Meyer Pharmacy, Jay A, Hensley K, Pfund T, Fred Meyer, Akers J, Washington State University. Email: claire.rutledge@fredmeyer.com.

Objective: The aim of this study was to assess the impact of a pharmacist-specific training program on the number of vaccines recommended and drug therapy problems identified by pharmacists during medication synchronization patient enrollment visits. Medication synchronization programs offer patients a convenient and simplified method to pick up their medications at one time and helps to reduce the number of missed or forgotten refills. This type of program has been shown to help patients achieve higher adherence to chronic medications, such as antihypertensives and oral antidiabetic medications. Improved adherence aids in the reduction in the number of avoidable chronic disease state-related complications and hospitalizations. Within one community

pharmacy chain, the pharmacist must conduct a comprehensive medication review, assess immunization status, potential drug therapy problems, review the patient's whole health profile, and clarify any questions regarding the program during the enrollment visit. This enrollment visit is a critical interaction between the pharmacist and patient, creating opportunities to make necessary interventions and identify gaps in healthcare, and collaborate with other healthcare providers. To ensure pharmacists are providing the highest quality enrollment visits, an enrollment visit-focused training program was developed.

Methods: A training program designed for pharmacists was implemented across 41 pharmacies in two regional districts of a community pharmacy chain. The goal of this training was to highlight key components of a medication synchronization enrollment visit. These components include education on vaccine recommendations and identifying potential interventions that would warrant communication with a provider. During an enrollment visit, pharmacists can document if any vaccines were recommended and if drug therapy interventions were identified and communicated with the provider. These two measures were analyzed using descriptive statistics and means to compare year-over-year results prior to and after training. Additionally, the program provided training on proper enrollment visit documentation as well as counseling points to ensure patient satisfaction and improved medication adherence as a result of the program.

Preliminary Results: Data will be analyzed post-implementation of the training program implemented between October 2019 and February 2020 and compared to data from the same time period of the year prior to the training program.

Implications/Conclusions: It is hypothesized that the training program will have a positive effect on the number of vaccine recommendations and drug therapy problems identified and documented during the enrollment visit. A potential result of this study will be increased vaccination recommendations and drug therapy issues identified which may ultimately improve overall patient health and decrease risk of hospitalizations.

395-Assessment of the Courage to Quit Smoking Cessation Program at the Largest Free Clinic Setting in the Nation. Somani Babul N, University of Ilinois, Khaja F, CommunityHealth, Younge J, University of Illinois. Email: nsbabul@uic.edu.

Objective: APhA 2019 Abstract Background/Objectives Smoking cigarettes can cause many detrimental health effects that involve nearly every organ in the body. Quitting smoking has been shown to have immediate and long-term positive health benefits. Data from the CDC shows that each year, approximately half a million Americans die prematurely because of smoking or second hand smoke. It is also known that quitting smoking at any age is associated with multiple health benefits. Strong data suggests that only one year after quitting smoking, the added risk of coronary heart disease is cut in half than that of a smoker's. The objective of this study is to identify the impact of the Respiratory Health Association-Courage to Quit© (RHA-CTQ©) Smoking Cessation Program at the largest free clinic in the nation. The primary objective is to assess the number of patients who were able to decrease the number of cigarettes per day through participation in a formal smoking cessation program, Courage to Quit© through the Respiratory Health Association (RHA). Secondary objectives include to assess the pharmacotherapy methods that were utilized to assist patients and to assess patients who were able to successfully quit smoking.

Methods: This is a retrospective electronic medical records review study to analyze the impact of a smoking cessation program for patients in a free clinic setting. The medical charts of patients who were enrolled in the smoking cessation program will be reviewed in order to analyze data. The retrospective chart review will be completed for patients who participated in the smoking cessation program between November 2017 to November 2019. The smoking cessation program through the Respiratory Health Association consists of three sessions with patients which can be done through one-on-one appointments or group visits with a pharmacist, nurse or other support staff. A pharmacotherapy regimen plan is created on the first visit to assist the patient in their smoking cessation. During subsequent appointments, patients are given access to medications for free, to assist with smoking cessation, as well as provided counseling using the Courage to Quit© smoking cessation program booklet through the RHA.

Preliminary/Final Results: Research: In progress. Data analysis will consist of the assessment of baseline number of cigarettes smoked per day and the number of cigarettes smoked per day after participation in the smoking cessation program. Research will also report on the pharmacotherapy methods that were utilized and the number of patients who were able to quit smoking.

Conclusions/Implications: Pharmacists in a free clinic setting can have a positive impact on patients attempting to quit smoking though a smoking cessation counseling program, and by providing patients access to free medications. The Respiratory Health Association-Courage to Quit© Smoking Cessation program is successful in helping patients decrease the number of cigarettes smoked per day.

396-Analysis of Provider-generated Revenue and Impact on Medication Reconciliation from a Pharmacist-led Chronic Care Management Service. Sotelo E, University of North Carolina at Chapel Hill, Nunemacher C, Holland C, Realo Discount Drugs, Rhodes L, Marciniak M, UNC Eshelman School of Pharmacy. Email: esotelo@realodiscountdrug.com.

Objective: On January 1, 2015, the Centers for Medicare and Medicaid Services began paying for Chronic Care Management (CCM) services under the Medicare Physician Fee Schedule. Pharmacists are in an excellent position to provide CCM services, as these services can be performed under the general supervision of a provider and billed utilizing incident-to billing. Published data regarding pharmacist-provided CCM services is limited, especially as it relates to direct revenue. Since March 2018, an independent community pharmacy has partnered with a patient-centered medical home (PCMH) to provide CCM services with the PCMH's 10 clinics across the

state of North Carolina. Within this contract, the pharmacist serves as the primary care coordinator for enrolled patients, has access to the electronic health record (EHR), and performs care coordination services via phone. These services include medication reconciliation, coordinating referrals, identifying community resources, requesting appointments on the patient's behalf, communicating medication refill requests, providing vaccine recommendations and conducting falls risk, COPD exacerbation, and depression screenings. The primary objective of this research is to measure the average revenue generated per patient from (1) CCM billing and (2) in-person office visits resulting from a pharmacist referral on behalf of the PCMH. The secondary objective will assess the number of medication reconciliations during the study period and identify the types and frequencies of medication discrepancies identified during each medication reconciliation.

Methods: This retrospective analysis will assess data collected by pharmacists pursuant to this CCM contract for interventions completed between January 1, 2019 and June 30, 2019. For the primary objective, the electronic health record (EHR) will be utilized to assess the number of appointment referrals made by the pharmacist to the physician resulting in a scheduled and completed in-office appointment. The revenue generated from CCM billing will also be included within this total. The secondary objective will be measured by assessing which patients received a medication reconciliation using information from the patient's electronic chart. The EHR will then be reviewed further to categorize the types and frequencies of medication discrepancies discovered during the medication reconciliation. Types of discrepancies in this study will include medication recorded on the medication list but no longer being used by the patient, medication omission from the medication list, strength mismatch, therapeutic duplication, and dosing mismatch. Descriptive statistics will be used to analyze data.

Preliminary Results: Institutional Review Board approval is anticipated in October 2019. Data collection will occur November 2019 through January 2020.

Conclusions/Implications: To expand community pharmacist-led CCM services and provider contracts, it may be helpful to demonstrate to providers the revenue that can be provided through CCM services. This knowledge can help begin and expand pharmacist-provider contracts that facilitate consistent patient interaction and optimize patient care through medication list accuracy and increased patient focus on treatment goals.

399-Evaluation of Pharmacy Technician Involvement in Clinical Service Delivery within a Grocery-Based Community Pharmacy. Taylor B, The Ohio State University College of Pharmacy and The Kroger Co., Columbus Division, Effinger S, The Kroger Co., Columbus Divison, Blank E, The Kroger Co., Columbus Division, Mehta B, The Ohio State University College of Pharmacy. Email: taylor.3344@osu.edu.

Objective: Due to the expanding roles of pharmacists and pharmacy technicians, there is increased need for involvement by technicians to aide in the completion of clinical services, such as identifying patients eligible for medication therapy management (MTM), conducting prework for comprehensive medication reviews (CMR) and billing for clinical services. Within one division of a grocery-based community pharmacy chain, technicians are stratified based on level of experience, with advanced levels having expanded roles in clinical service delivery. To advance to higher levels, technicians must complete additional training including computer-based training (beginner/ intermediate level), reading a manual (advanced level) and passing an examination (all levels). Additionally, technicians who are eligible to become advanced may take an in-person training course before taking the examination (84% completion rate). Even with these training programs and 508 advanced level technicians, technician involvement in this division remains inconsistent across locations. The aim of this study is to evaluate the advanced technician training to identify successes and barriers to technician involvement in clinical services, knowledge and comfort of their role in clinical service delivery, and identification of appropriate interventions to overcome barriers.

Methods: This prospective, descriptive research study was submitted and approved by the Ohio State University IRB and will be implemented during the second half of 2019. In the summer of 2019, stores with high MTM completion rates and consistent rates of technician involvement based on individual performance metrics (IPM) were identified. Pharmacists from these stores will be interviewed on how they successfully incorporate technicians into clinical service delivery workflow and motivate technicians. To assess technicians' knowledge and comfort of their role in clinical service delivery, and to identify essential content areas and gaps in current training offered, pharmacy technicians will be interviewed. Technicians from locations that have a higher than average clinical opportunity completion rate and technicians from locations that have below average completion of clinical opportunities will be identified based on IPM. Pharmacy technicians be asked their thoughts and ideas about involvement in clinical service delivery, opinions on the usefulness of, applicability, and gaps in the training process, barriers to consistent involvement in clinical service delivery and improvements they feel should be made to training. In spring of 2020, appropriate training will be identified, developed or refined from existing training and delivered to increase pharmacy technician involvement in clinical service delivery.

Results: Research in progress. Results will be analyzed using descriptive statistics and inferential statistics as appropriate.

Implications/Conclusions: The results of this study could be used to provide insight on how to overcome barriers to pharmacy technician involvement in clinical service delivery and the type of training that should be provided to pharmacy technicians.

400-The Effect of a Patient Care Event Handbook on Distance Pathway Pharmacy Student Involvement. Taylor C, Sandquist K, Dorius T, Bock T, Siracuse M, Castillo S, Creighton University School of Pharmacy. Email: christapierce@creighton.edu.

Objective: Creighton University offers an accredited online-based entry-level PharmD program --one of only two pharmacy programs in the nation to do so. Over the past few years, the distance program has grown to become a larger percentage of the pharmacy classes admitted to Creighton University. The Class of 2023 is comprised of 62% distance pathway students, which has increased in comparison to the Class of 2021 that is comprised of 50% distance pathway students. Participation in patient care events held by professional organizations is a major part of the co-curricular experience for campus pathway students. Creighton University's APhA-ASP chapter holds many patient care events, such as Shoo-the-Flu vaccination clinics, hemoglobin A1c checks, and medication counseling for campus students to practice hands-on skills that pharmacists use every day. To facilitate the participation of distance students in the chapter, as well as encourage local patient care event involvement, the "APhA-ASP Distance Student Handbook" was constructed by APhA-ASP officers and shared with the distance students. The objective of this study was to measure the impact of the "APhA-ASP Distance Student Handbook" on distance student participation in patient care events and the number of patient served through these events.

Methods: A 12-page distance handbook was created by APhA-ASP executive team members. Information in the handbook was compiled by reviewing past distance student experiences and brainstorming. The handbook included information, ideas, and tools to assist distance students in using their APhA-ASP membership to become involved locally and impact patient care and health in their community. Pictures of past projects and templates for posters were provided as resources to help students create presentation material. The handbook was sent to over 200 distance students via an email attachment and an online meeting was hosted by the executive team members to introduce the handbook. After December 31, 2019 the impact of the handbook was assessed by comparing the number of distance student hosted patient care events before and after the initiation of the handbook. The number of patients served through patient care events before and after the initiation of the handbook was also be examined.

Results: Study currently in progress until December 31, 2019.

Implications and Conclusions: Creighton's School of Pharmacy is consistently trying to find ways to make students in the distance program feel included and unified with the campus pathway. This handbook will help our APhA-ASP distance members identify ways they can stay involved while being away from Creighton's campus. As the distance pathway grows to the majority of admitted pharmacy classes, the need to facilitate involvement in APhA-ASP and patient care across the nation is necessary. Making resources more easily accessible to distance students and creating an easy to follow, stepwise approach to creating events in their local areas has the potential to extend the impact of Creighton University's pharmacy student patient care activities beyond Omaha.

401-Clinical Pharmacist Intervention on Drug-Related Problems in Epilepsy patients. Thumma S, St. Peter's Institute of Pharmaceutical Sciences, Telangana, India. Email: sahajathumma.26@gmail.com.

Objective: The objective was to identify the type and cause of Drug Related Problems (DRP's) in Epilepsy patients' by clinical pharmacist and provide appropriate resolutions in a tertiary care hospital. Background: DRP's are of major concern in view of the physical, psychological and economic burden to the patients'. Thus, optimization of drug therapy by clinical pharmacist by preventing DRP in Epilepsy patients' may influence the health costs, potentially save lives and enhance patient quality of life.

Methods: A Prospective Interventional Study was conducted by clinical pharmacist among 288 Epilepsy patients with DRP's for about nine months period (November 2018 to July 2019) in Neurology department of a tertiary care hospital. Inclusion criterion were in-patients of both sexes with Epilepsy, on any medication with multiple co-morbidities and exclusion criterion were pregnant and lactating women, poisoning, accident cases and patients whose clinical history could not be obtained. The data collected upon treatment chart review had been correlated and the DRP's were identified and classified using Hepler and Strand classification. The other sources used are the PCNE classification version 8.03 (which helped in identifying the cause of the DRP, its intervention and level of acceptance of the intervention), Truven Health Analytics-Micromedex solutions for identifying Drug-Drug Interactions and Adverse Drug Reaction probability scale (Naranjo's) for identifying the probability of adverse drug reaction. The data were then analysed for descriptive statistics with health care team.

Results: Among 288 patients, a total of 432 DRP's were identified. Common DRP were drug interactions (54%) followed by drug use without indication (12%) and alternative dosage form (0.4%). The rate of overall DRP's was found to be on an average of 1.50 DRP's per patient. The frequency of DRP's was higher in elderly patients due to poly pharmacy and presence of multiple co-morbidities. The total acceptance rate of interventions by the physician was 58%.

Conclusion: The main causes that resulted in DRP to occur are poly-pharmacy, medications with a narrow therapeutic range and non-adherence of the patient. Pharmacists', in collaboration with multi-disciplinary team, demonstrated a positive impact by identifying, intervening and resolving the DRP's in the patients'. This thereby reduced DRP induced morbidity and mortality, improved adherence to the medication, enhanced the patient compliance and health related outcomes.

402- Effective Coaching Strategies for the "Flip the Pharmacy" Practice Transformation Initiative in Pennsylvania Community Pharmacies. Turco E, Cothrel S, Coley K, Carroll J, McGivney M, University of Pittsburgh, McGrath S, Pennsylvania Pharmacists Care Network, Firm A, Antypas C, Asti's South Hills Pharmacy. Email: evt14@pitt.edu.

Objective: The objective of this project is to identify effective coaching strategies for implementation of the "Flip the Pharmacy" (FtP) program in community pharmacies in Pennsylvania. Flip the Pharmacy is a nationwide, scalable community pharmacy practice

transformation effort sponsored by the Community Pharmacy Foundation and led by CPESN-USA to transform community pharmacy practice from a traditional, prescription-driven model to a patient-centered care model. This program utilizes peer coaching and data-driven milestones to measure pharmacy transformation progress. In Pennsylvania, there are over 20 coaches paired into 12 teams supporting 40 community pharmacy locations, which are all members of the state's community pharmacy enhanced services network (CPESN): the Pennsylvania Pharmacists Care Network (PPCN). Coaching teams include pharmacy owners, practitioners, and faculty from Pennsylvania schools of pharmacy. Coaches will guide pharmacy teams through "Change Packages" and hold them accountable to program goals and milestones. The goal of this project is to identify effective coaching strategies to scale the practice transformation beyond participating FtP pharmacies to over 150 pharmacies in the PPCN.

Methods: This qualitative study will use semi-structured interviews with key informants within FtP conducted by investigators. Coaches, in addition to the primary pharmacy contacts, are eligible for inclusion. A purposeful sampling of key informants (i.e. coaches, primary pharmacy contacts) from FtP pharmacies will be conducted. Interview questions will be derived from the Consolidation Framework for Implementation Research (CFIR) and include the following four domains: (1) intervention characteristics, (2) inner setting, (3) characteristics of individuals, and (4) process. Interviews will be audio-recorded and transcribed for analysis. Interviews will continue until saturation, defined as when no new information is elicited, is reached. A codebook will be developed and two investigators will code each transcript independently. Coding discrepancies will be resolved through discussion. A thematic analysis will be conducted by the investigative team.

Preliminary/ Final Results: Research in progress.

Implications/Conclusions: Community pharmacies nationwide are closing their doors due to financial strains associated with reduced reimbursement from medication-dispensing. There is a critical need for the expansion of community pharmacy services beyond dispensing to meet evolving patient needs. The implementation of new clinical services at community pharmacies is a complex undertaking, and a broad array of effective strategies are necessary to support the transformation of independent pharmacies. Replicable and scalable coaching strategies gathered from this project can be utilized by other leading community pharmacy practice transformation efforts across the country.

403-Development and Implementation of a Community-Based Patient Monitoring Program Utilizing PharmD Students. Vohra Y, Rush S, Brown C, College of Pharmacy, University of Texas at Austin. Email: yogeshvohrayv@utexas.edu.

Objective: Project Collaborate (PC) and Know Your Medicine (KYM) are student led patient monitoring programs aimed at meeting the goals of Healthy People 2020 while serving underserved communities of Austin and San Antonio. PC aims at providing quality health screening and health education services, and KYM, promotes medication safety and management. PC/KYM programs will be conducted by PharmD students of College of Pharmacy, the University of Texas at Austin at Foundation Communities. Foundation Communities is a local non-profit organization that is committed to providing affordable housing and on-site support services for underserved populations.

Methods: This is a non-experimental study using quantitative survey methods among a convenience sample of patients at Foundations Communities. Six to eight PC/KYM events will be conducted at various communities during the year 2019-20. Study inclusion criteria are: 21 year of age or older, at least one chronic medical condition, and > 3 prescription medications. PC/KYM programs incorporate health screenings, patient education, and comprehensive medication reviews. Patients will be encouraged to select one high risky behavior, and a Patient Action Plan (PAP) will be developed to help them achieve their goals. The program will be evaluated through a comprehensive review with health screenings at baseline and 12 months. Brief phone follow-ups will be conducted at 1, 3, 6 and 9 months. The review will include a survey consisting of questions and validated tools to collect data on the following outcomes: Medication-Related Problems (MRP) identification, MRP resolution, medication adherence, patient empowerment, and clinical indicators (e.g., blood pressure, glucose levels, and cholesterol). Patients who participate in two PC/KYM sessions and all follow-ups will receive a $20 gift card at sign-up and an $80 gift card upon program completion. Descriptive statistics will be conducted for all variables, and repeated measures analysis of variance will compare outcomes across all time points. Statistical significance will be based on alpha <0.05.

Results: Data collection is ongoing. Preliminary results of the first event consisted of seven patients, with a majority being white males with high school degrees and having either hypertension, hypercholesterolemia, or diabetes. Most indicated difficulty paying for medications, concern about long-term effects and having unwanted medication side effects. Prominent MRP's were dizziness, constipation, and loose stools. Other common problems were lack of transportation for medication pick-up and medication costs. Preliminary evidence indicated that patients felt empowered post-event, responding "Yes, a lot" to questions "Do you feel more in control of your health?", "Do you know what to do to take care of your health problem?" and "Do you advocate more for yourself?". Adherence data suggest that patients took medication as instructed on 6.5 days/week. Also, for the majority patients their current medications were working "Good".

Conclusion: The inaugural session of the Patient Monitoring Program was successful with the response rate of 100% . All seven eligible patients participated in the study. Essential baseline data on health screening values, MRPs, medication adherence and patient empowerment was collected and significant improvement in scores are expected over the project period.

404-Potentially Inappropriate Medications: Description of a Pharmacist-led Educational Intervention in a Community Pharmacy.

Williams S, Witry M, Veach S, The University of Iowa College of Pharmacy, Bullock T, Spannagel A, Johnson J, Osterhaus Pharmacy. Email: samuel-williams@uiowa.edu.

Objective: This quality improvement project will implement a pharmacist-led educational intervention that targets potentially inappropriate medication (PIM) use in older adults. The objectives are to 1) describe the integration of the service into the workflow of a community pharmacy and 2) describe the targeted medication management interventions that result from this service. The goal of this project is to promote the deprescribing of PIMs which may have an unfavorable risk-benefit profile compared with alternative treatment options.

Methods: This project will be conducted at an independent community pharmacy. Staff pharmacists will be trained to deliver and document pharmacist-led educational interventions regarding PIM use that are directed at both patients and prescribers. Educational interventions for patients consist of a drug-specific brochure plus a patient-centered discussion about the PIM. The educational intervention for prescribers consists of an evidence-based treatment recommendation tailored by the pharmacist and transmitted to the prescriber by facsimile. Patients included in this project will be at least 65 years old and taking one or more medications from the four classes of Beers Criteria medications targeted by this project: NSAIDs, first-generation antihistamines, sedative-hypnotics, and sulfonylureas. A class-specific alert will automatically print from the pharmacy dispensing system when a Beers Criteria medication in one of these classes is filled for a patient meeting the age criteria. The class-specific alert will be kept with the patient's medications that are ready for pickup and will signal that the patient and the prescriber of the medication are eligible for pharmacist-led educational interventions. At the point of medication pickup, the pharmacist will use their professional judgment to make interventions on the use of PIMs. After a patient-directed intervention, the pharmacist will document the drug name, recommendations made, education provided and the patient's response to the intervention. Prescriber-directed educational interventions sent by facsimile as well as prescriber responses returned to the pharmacy will be kept in the patient's electronic record. Analyses will include calculating descriptive statistics for patient demographics, implicated medications, the types of targeted medication management interventions, and patient and prescriber responses to the interventions.

Preliminary/Final Results: In progress.

Conclusion/Implications: In progress.

406- Retrospective Evaluation of 24-Hour Vancomycin AUC in End Stage Renal Disease Patients. Wong V, Ohio Northern University Raabe College of Pharmacy, Ziegenbusch K, Mercy Health St. Rita's Medical Center. Email: v-wong@onu.edu.

Objective: End-stage renal disease (ESRD) patients with suspected or confirmed methicillin-resistant infections often receive weight-based vancomycin dosing, which is subsequently adjusted based on pre-dialysis or post-dialysis serum vancomycin concentration. However, the 24-hr area under the concentration versus time curve (AUC) is the pharmacodynamic end-point that is associated with vancomycin efficacy. Although dose adjustment is currently based on concentrations, the draft vancomycin dosing guidelines, which are open for public comment, suggest using 24-hour AUC for both dosing and monitoring of vancomycin therapy TO A TARGET OF 400-600 MG * HR/L. Performance of these weight-based and intermittent dosing protocols in achieving target 24-hour AUC has yet to be established in our institution. The objectives of this study are, therefore, to retrospectively determine this pharmacodynamic index in dosing vancomycin in esrd patients.

Methods: We used data from our hospital's electronic medical record that were retrospectively collected for a study on non-renal elimination of vancomycin after intravenous administration in ESRD hemodialysis (HD) patients. The study was granted IRB approval by our institution. We requested from our informatics team a list of patients who were admitted to our institution and received a one-time dose of vancomycin from january 2015 at increments of 3-6 months. We then accessed and reviewed the medical records of these patients and selected those that fulfilled our inclusion criteria--adult ESRD patients on chronic hemodialysis, who received intravenous vancomycin and had measured serum vancomycin concentration(s). Patients were excluded if they received oral vancomycin or were receiving peritoneal dialysis. Age, sex, weight, height, indication, vancomycin dosing, vancomycin serum concentrations, and hemodialysis sessions were collected for individual patients. Monolix version 2019R1 will be used to analyze the data using a one-compartment model. Pharmacokinetic parameter estimates and percentage of patients who achieved target aucs will be reported.

Preliminary/ Final Results: Sixty-nine esrd patients fulfilled our inclusion criteria. Data collection is complete and is pending analysis.

Conclusions/Implications: This study will provide information for a prospective study on the same subject, as well as information on the performance of currently used dosing protocols in terms of achieving target 24-hour AUC.

407-Describing Stimulant Medication Treatment Patterns for the Treatment of Adults with ADHD and Comorbid Depression at a Family Medicine Clinic. Wood T, University of Utah College of Pharmacy. Email: Taylor.Wood@pharm.utah.edu.

Objective: The objective of this study is to describe the current use of stimulant and other medication therapies in adult patients with attention-deficit/hyperactivity disorder (ADHD) and comorbid depression in a family practice setting. ADHD is a psychiatric disorder that results in significant social, personal, and behavioral stresses. In recent years, increasing numbers of adults are being diagnosed with ADHD. Adults with ADHD have a higher prevalence of psychiatric comorbidities than do children with ADHD. Major depressive disorder occurs in 20-50% of patients diagnosed with ADHD. Because of the variability of clinical presentation in adults with ADHD and

depression, there is high variability in the treatment. To add to the difficulty in treating these patients, the available guidelines, the Canadian ADHD Resource Alliance Guidelines, recommend treating the more disabling of the two conditions first. This recommendation does not provide specific medication treatment recommendations for this population. Consequently, many adults with ADHD are treated with stimulant medications alone, which are not without risks, and are not treated for concomitant conditions. Prescription stimulants are emerging as a significant source of controlled substance abuse in the United States healthcare system. The combined risks of abuse potential and harmful adverse events of psychosis and mania create a patient safety issue. Further research will allow pharmacists and stimulant prescribers to improve the quality of life of adult patients with ADHD and comorbid depression while minimizing misuse and adverse effects of stimulant medications, and under-treatment of depression.

Methods This descriptive study is being conducted as a retrospective chart review that will sample patients of a family medicine clinic over the eight-month period of May 1, 2018, to December 31, 2018. Data is collected from patients who were 18 years or older, had a diagnosis of ADHD and depression per ICD 10 codes, and had a prescription for at least one stimulant medication during the study period. Medication treatment patterns for ADHD and depression will be analyzed and described by drug class. Descriptive statistics will be used to describe the data. Of the patients eligible for the study, a sample of 150 charts were randomly selected for review. The number of patients treated with an amphetamine-based stimulant for ADHD and the number treated with a methylphenidate-based stimulant will be reported. The concurrent depression treatments, or lack of treatment, will also be reported.

Preliminary Results: The average medication therapy combination for ADHD and depression was amphetamines and Selective Serotonin Reuptake Inhibitors (SSRIs) or methylphenidate and SSRIs.

Conclusions/Implications Adults with ADHD and depression are often treated in a family practice setting. Limited information is available to guide providers in treating adults with ADHD and comorbid depression. We aim to describe medication treatment patterns in adult patients diagnosed with ADHD and depression in a family medicine setting for future research implicated in improving the process of care and patient outcomes.

408-Evaluating the Impact of Standardized Training and Procedural Documents to Increase Hormonal Contraceptive Services Provided By Pharmacists in Community Pharmacy. Yoon K, Pfund T, Hensley K, Fred Meyer, Akers J, Washingon State University. Email: kaylie.yoon@fredmeyer.com.

Objective: (132 words) This study assessed the number of hormonal contraception office visits conducted by pharmacists before and after implementation of standardized training and procedural documents. The scope of pharmacy practice is continuing to expand and has allowed pharmacists to prescribe for certain medications. In several states, pharmacists have the ability to prescribe hormonal contraceptives through Collaborative Practice Agreements (CPAs) or statewide protocols. Prior to September 2019, there was no standardized training or procedural document available for birth control consultations and prescribing amongst various states within one national chain. Implementing a standardized approach for clinical services of advanced scope is challenging due to variances in state legislation. However, recently the national chain piloted standardized hormonal contraception training and procedural tools amongst seven states and five divisions. This study will evaluate the impact of this initiative.

Methods: (161 words) Retrospective data was collected regarding the number of hormonal contraceptive office visits conducted by pharmacists prior to service standardization and training (September 2018 to February 2019) compared to the number written post standardization during the same time frame (September 2019 to February 2020). Approximately 463 pharmacies who have licensed pharmacists that can legally perform clinical assessments of patients which may result in prescriptions for hormonal contraceptives participated in data collection. Data was organized by the number of visits per store per period. A period is defined as a four-week time frame. A secondary analysis compared the number of prescriptions within three states and further analyzed by division within each state; one state with a state standing order, one state with independent prescriptive authority, and one state with CPAs to further elucidate if these differences in legislation had an impact. Given some of these states have multiple divisions within the state, a sub-analysis comparing these divisions within each state was also conducted.

Conclusions/Implications: (114 words) A research study assessing the difference in the rates of hormonal contraception prescriptions prescribed by pharmacists before and after implementation of standardized training and procedural documents in a national chain with several states would be beneficial as it can validate if standardized materials for associates and patients as well as active leadership engagement on implementation impacted pharmacists' confidence in their ability to provide services of advance scope, such as contraceptive prescribing. This can ultimately lead to more hormonal contraception prescriptions provided to patients thus an increased level of accessibility and more structured care for patients in the future. A secondary analysis was performed to gain insight into more successful legislative approaches for advanced scope.

Personalized Medicine/Pharmacogenomics

409-Impact of Cytochrome P450 2C9 Polymorphism on Warfarin Therapy in Saudi Population. Alsaikhan F, Prince Sattam Bin Abdulaziz University. Email: fsaikhan@hotmail.com.

Objective: Individualization of therapy based on patient's genetic profile is particularly important with certain drugs. Warfarin is one of vitamin K antagonists (VKA) that is widely used anticoagulant with inter and intra-individual dosage variability depending on many non-genetic and genetic factors. This study aimed to evaluate the effect of cytochrome P450 2C9 isoform (CYP2C9) polymorphism on

the dosage variability and therapeutic efficacy of warfarin in a subset of Saudi patient.

Materials and Methods: The study included 112 patients on regular warfarin therapy for various causes. Genomic DNA of all patients was isolated and quantified. The DNA samples were genotyped for CYP2C9*2 and CYP2C9*3 alleles by TaqMan allelic discrimination genotyping method. The primary outcome was time in therapeutic range (TTR). Data were compared utilizing one-way ANOVA, independent measures t-tests and the corresponding non-parametric test and Fisher's exact test.

Results: The dose of warfarin was less for patient expressing either genotype variant alleles of CYP2C9. Time in therapeutic range was not significantly different utilizing one-way ANOVA test when evaluating CYP2C9 genotype. Patients homozygous for *2 allele had less TTR (50.0%, p = 0.10) and lower average weekly dose than the others.

Conclusion: CYP2C9 polymorphism influences warfarin dosage and efficacy among a subset of Saudi population and tends to be a good clinical practice particularly in patients experiencing excessive bleeding or patients with less TTR.

410-Personalized Medicine: Patient Screening Tool Impact on Pharmacogenomic Services in the Community Setting. Carnett K, Albertsons/Idaho State University College of Pharmacy, Flynn T, Jindrich K, Strauss R, Hamper J, Albertsons Companies. Email: carnettkatie@gmail.com.

Objective: This study aims to evaluate the impact a patient screening tool has on providing pharmacogenomic testing in a community pharmacy setting. Optimizing patient medication therapies, preventing drug interactions, and avoiding adverse events are all examples of the impact a pharmacist can have when involved in patient care, but these examples can also apply to pharmacogenomics. Community pharmacists have displayed interest in implementing personalized medicine services and believe it to be a valuable tool in optimizing therapies and preventing adverse events. Insight gained will help identify the next steps in making pharmacogenomic services more accessible overall.

Methods: The pharmacogenomic screening tool was developed by the author based on the genes tested in the partnered pharmacogenomic test and medications with FDA pharmacogenomic biomarker information in their labeling. The screening tool is a form used by pharmacists to aid in identifying patients who would benefit from pharmacogenomic testing, sorting into one of two categories: those who are starting an entirely new therapy, and those who are not well controlled on their current medication regimen. Pharmacogenomic information can help guide treatment-naïve patients to their ideal therapy from the start, avoiding unnecessary treatment failures or potential side effects. Patients already taking an eligible medication will be evaluated for side effects, management of disease state, and for possible treatment resistance displayed by previous treatment failures or use of multiple medications. This will be a prospective study collecting data from November 2019 through March 2020. Pharmacists at chain grocery-store pharmacies in the Boise, Idaho area will be asked to utilize the screening tool while dispensing eligible prescriptions. Data collected will include the pharmacist recommendation of the pharmacogenomic testing service, if the patient utilized the testing service, and the reason(s) why the patient did not use the service, if applicable. Screening tools will be stored and collected from the store pharmacies weekly, and do not include PHI. The data from the survey will be analyzed using descriptive statistics.

Results: In Progress.

Conclusions: In Progress.

412-Assessment of Providers' Knowledge, Willingness, and Barriers to Utilizing Pharmacogenomic Services in Rural Community Pharmacy Settings. Kitchens T, Dalton E, South University School of Pharmacy, Tucker J, Carter J, Richmond Hill Pharmacy. Email: tkitchens@coastalpharmacyinc.com.

Objective: The purpose of this study is to assess providers' basic knowledge of pharmacogenomics, perceptions of the clinical usefulness of pharmacogenomics, perceived barriers to the implementation of pharmacogenomic services, and willingness to work with a community pharmacist to implement pharmacogenomic services in two rural community pharmacy settings. Pharmacogenomics is a rapidly emerging field, studying the way in which genetic variations contribute to a medication's response, which widely differs between individual patients. The goal is to match each patient to specific drugs that will be the most effective and will cause the least harm. Despite the evidence of its clinical utility, the application of pharmacogenomic services is greatly influenced by the acceptance of providers, who serve as primary stakeholders in making therapeutic changes based on the results of pharmacogenomic testing. Previous studies have noted challenges including inadequate provider preparedness and limited pharmacogenomic knowledge and education. Establishing multidisciplinary teams may bridge the gap and add additional value to improving patient outcomes. Clinical support from pharmacists has enhanced pharmacogenomic test utilization, and previous studies have demonstrated positive impacts with pharmacist assisted integration of pharmacogenomic applications. Because of their accessibility and access to the patient, community pharmacists are in the perfect position to offer personalized, pharmacogenomic services to assist in optimizing individualized patient care. Assessing providers' perceptions of clinical utility, perceived barriers, and attitudes toward pharmacogenomic services with pharmacists is necessary to gauge the applicability of a partnership in providing these services. Studies, however, are lacking in providers' perception of the implementation of clinical pharmacogenomic services with community pharmacists in rural community settings. This survey will garner further insight into these perceptions and attitudes toward pharmacogenomic service collaborations in this environment.

Methods: This prospective, survey-based research study aims to obtain qualitative data from providers within the rural community

pharmacy settings of Richmond Hill, Georgia, and Hinesville, Georgia. The study population will include physicians (Medical Doctors or Doctors of Osteopathic Medicine), physician assistants, and nurse practitioners serving patients in the two rural community settings. The survey will include baseline demographics of study participants and will be electronically sent to each provider to voluntarily and anonymously complete. Data collection will occur from November 2019 through December 2019. The data results will be assessed utilizing a mixed method approach of qualitative analysis and quantitative analysis by applying descriptive statistics. Quantitative outcome measures will include the total number of providers identified and total number of providers that responded based on provider type and rural community location. Qualitative outcomes will examine provider knowledge, perceptions of pharmacogenomic testing and perceived barriers to implementing pharmacogenomic testing services with community pharmacists in rural community settings.

Results: Research is in progress. Institutional Review Board approval is anticipated in October 2019.

413-PGX LEARN – Pharmacogenetic Learning And Educational Environments for Community pharmacists to be Ready for the Next Generation. Sazgar N, Mosley S, University of Southern California School of Pharmacy. Email: nsazgar@usc.edu.

Objective: Primary: To determine whether a self-guided, lecture-based, or a role-playing case-based educational program improves comprehension, interpretation, and application of pharmacogenetic data for pharmacists in the community setting. Secondary: To determine whether an educational program improves perceived self-confidence of pharmacists in identifying, interpreting and applying pharmacogenetic data. Background: Pharmacogenomics is a growing component of precision medicine that can help guide drug selection and dosing to improve medication response and decrease rates of adverse events. Historically, private companies have supplied pharmacogenetic tests that required an order by a healthcare provider, but the Food and Drug Administration approved the first direct-to-consumer (DTC) pharmacogenomic test in October 2018, which would make pharmacogenomic testing more widely available. [1] As a result, there is an anticipated increase in need for patient counseling and interpretation of pharmacogenomic results. Pharmacists are distinctly suited to meet this need because to their unique training and strategic placement in the community setting. [2] However, pharmacists report a lack in self-confidence to interpret pharmacogenetic results, despite agreeing that it is relevant to their clinical practice. [3,4] Since pharmacogenomics has recently been incorporated into pharmacy school curriculums, it is possible that this lack of confidence stems from minimal education in this topic.[5] Regarding education, pharmacists reported that they prefer lecture, printed and active learning methods for building self-confidence in interpreting pharmacogenetic information. [3,4] Being able provide pharmacists with an educational program that is efficient yet comprehensive in delivery is critical to being able to meet the increase in the anticipated need of pharmacogenetic test interpretation due to the busy nature of community pharmacy.

Methods: Community pharmacists are eligible to participate and will be invited through databases obtained from a large academic medical center, school of pharmacy, and chain store pharmacies. At live education events, participants will partake in an electronic knowledge-based pre-test, followed by one of three educational programs (self-study, traditional didactic, or active learning), then will take a matched knowledge-based post-test. Each test will be approximately 5 minutes in length. Those unable to attend a live event, will be randomly assigned to the traditional or active learning arm and participate in the surveys remotely. Participant demographic data will be collected including years of practice and degree earned. Pharmacists will also rate their perceived self-confidence regarding interpreting pharmacogenetic data using a 5-point Likert scale prior to and after completing the educational programs. The two exams will feature matched questions assessing pharmacists' comprehension/understanding, interpretation, and application of pharmacogenomic data. One-way ANOVA with post-hoc comparison will be used to detect differences between any two groups' pre-test scores and exam times. Multivariable analysis will be used to detect differences between post-test groups' scores and exam times. A paired t-test will be used to detect differences between pre-and post-test scores within groups. A Chi-squared test will be used to detect differences in confidence ratings.

Results: to be reported.

Conclusion: to be reported.

414-Effectiveness of Active Learning Techniques in a Pharmacogenomics Elective. Stitzlein L, Guy J, Oestreich J, Dudley R, University of Findlay. Email: stitzleinl@findlay.edu.

Objective: The purpose of this study is to evaluate which active learning strategies in an elective improve learning and retention of key pharmacogenomics concepts. To date, other pharmacy schools include pharmacogenomics education in their curriculum as a stand-alone course or blended throughout the curriculum and many use active learning techniques to help facilitate learning retention. Incorporating active learning strategies, such as hands-on practice of genetic testing procedures and case-based activities, has shown to improve student learning and is often preferred by the students.

Methods: The present study includes an evaluation of established and new active learning strategies in a pharmacogenomics class first offered to students as a 1-credit hour elective during the fall of 2019 at the University of Findlay. Within this class, students learn the fundamentals of clinical pharmacogenomics through educational games, patient cases, and in-class discussions. Additionally, there is a laboratory component of the course that introduces the students to the steps of genotyping using real-time PCR, including DNA isolation and interpretation of the laboratory results. Throughout the elective, students participate in mock counseling sessions, present a pharmacogenomics service proposal, and demonstrate competence by verbal assessment. In order to assess the initial

effectiveness of the new learning techniques, the students will complete a pre-and post-examination and will submit feedback via a final course evaluation.

Preliminary Results: There is a total of 15 students enrolled in the pharmacogenomics elective for fall 2019 and all voluntarily elected to be included as participants in this study. Prior to the start of the elective the students were given the pre-examination in which the average score received was a 45%. Following the completion of the content-based classes, a post-examination will be used to assess their improvement and initial retention. Final course evaluations will be used to determine the students' impression of their knowledge retention and determine their preference of active teaching strategies.

Conclusions/Implications: Active learning techniques that were incorporated into this elective have the potential to enhance long-term knowledge retention and understanding of basic pharmacogenomics concepts. Overall, the strategies used in this elective, if successful, have the ability to be implemented into other courses across the curriculum for similar applications.

415-Implementation of a Pharmacogenomics Program at an Employer-Based Health Center. Will A, University of South Carolina College of Pharmacy, McEvoy A, Premise Health, Fabel P, University of South Carolina School of Pharmacy. Email: abigail.will@premisehealth.com.

Objective: Implementation of a Pharmacogenomics Program at an Employer-Based Health Center Background: The employer-based health center provides care for employees of a manufacturing plant, their spouses and their dependents. Various health care services are offered at the clinic, including primary care, optometry, dentistry, outpatient pharmacy, chronic condition management, and occupational health. The clinic employs several health care providers, including clinical pharmacists. A needs assessment revealed a gap in service related to medication management; therefore, a pharmacogenomics pilot program was implemented to avoid potentially ineffective therapies and adverse reactions. The primary objective of this study is to evaluate the impact of a pharmacogenomics service provided by a pharmacist on medication optimization. Secondary objectives include both patient and provider satisfaction with the service.

Methods: A pilot program will be implemented for 40 patients of the employer-based health center. Patients will be pre-screened to determine eligibility for a fully inclusive pharmacogenomic screening. Patients will complete an electronic initial survey to determine eligibility, this survey will be completed after referral from the primary care team or personal patient interest. Eligibility is based on medical diagnosis, number and type of medications, and patient or provider reported history of adverse events or medication non-response. All factors will be taken into consideration for eligibility; however, per the clinic's needs assessment, the largest potential impact was determined to relate to optimization of mental health medications. Patients who do not utilize on-site pharmacy services will be excluded along with those < 18 years of age. Once eligible, the patient will complete a buccal swab. The swabs will be sent for pharmacogenomic screening through a national laboratory. The test results will be provided to the pharmacist for interpretation and patient education. Pharmacogenomic screening results will be stored within the patient's electronic health record. Recommended medication changes will be sent to the patient's provider. Additionally, prescribers will receive education on how to apply results to future therapy decisions. The number and type of medication changes recommended and accepted will be measured. Time spent by the pharmacist will also be tracked. Lastly, patient and provider satisfaction with the service will be evaluated via an electronically delivered post-survey.

Results: In progress.

Conclusion: The addition of a pharmacogenomics service provided by pharmacists has the potential to improve medication optimization within an employer-based health center. This pilot project will help determine how an expanded pharmacogenomics service may be implemented and show impact within an employer-based health center.

Pharmacist Behaviors and Attitudes

416-Describing the Pharmacist-Patient Interaction when Counseling on Opioid Prescriptions. Anyanwu P, Tata V, Al-Rawwad T, Thornton J, University of Houston, College of Pharmacy, Department of Pharmaceutical Health Outcomes and Policy, Fleming M, College of Pharmacy, Department of Pharmacotherapy, University of North Texas Health Science Center. Email: paanyanw@central.uh.edu.

Objective: In 2017, an estimated 1.7 million people within the United States suffered from an Opioid Use Disorder (OUD). When discussing interventions to ameliorate the opioid epidemic, community pharmacists are in a unique position to aid in efforts to increase prevention as well as improve access to effective treatment, recovery, and harm reduction strategies. This study was conducted to assess pharmacists' practices when counseling patients on their prescription medications, the barriers to counseling, and their preferences for training.

Methods: Five focus groups of community pharmacists (n = 45) were conducted in a major metropolitan city in the southern United States. All focus groups were structured using a moderator guide consisting of both discrete and open-ended questions. The data from these focus groups was analyzed using a thematic analysis approach and the qualitative data analysis software.

Results: The participants in this study had a high self-efficacy regarding their ability to counsel on both new and opioid prescriptions. Time constraints, patient refusal of counseling, and language barriers were mentioned as the main barriers that prevent counseling on

new prescriptions. When discussing barriers to counseling on opioid prescriptions, participants indicated the same barriers as when counseling on new prescriptions as well as mentioning a lack of safety. Participants addressed many components of counseling such as indication, drug benefits, and possible side effects, however, only 20% of the participants mentioned safe storage and disposal as a component to counseling. When asked about the need for training, participants gave mixed responses with more experienced pharmacists having a lower perceived need for training compared to the less experienced pharmacists.

Conclusions/Implications: This study furthers our understanding of the pharmacist-patient interaction, thereby allowing us to identify gaps in current practices. To improve this relationship, training interventions need to be designed to allow for more comprehensive counseling on prescription medications. The training interventions should address the barriers that community pharmacists currently face and ways to circumvent the barriers. Community pharmacists are in a unique position to help combat the opioid crisis. It is important to capitalize on the potential community pharmacists have in ameliorating the opioid crisis in the United States.

417-Knowledge, Attitudes, Beliefs, and Practices and Implementation of Pharmacist-Delivered Services for Nicotine Replacement Therapy in Community Pharmacies. Bogumian A, University of Southern California, School of Pharmacy. Email: bogumian@usc.edu.

Objective: As a result of the 2013 Senate Bill 493 (SB-493), in 2016, the California Board of Pharmacy approved regulations for a state protocol that authorizes pharmacists to independently furnish prescriptions for nicotine replacement therapy (NRT)to aid in smoking cessation. However, payment for services, that were established by SB-493, was not addressed until the subsequent passage of the 2016 Assembly Bill 1114 (AB-1114), which mandated payment for pharmacist services by Medi-Cal, the state Medicaid program. The regulations and payment mechanism for pharmacist services, however, was not finalized by the CA Department of Health Care Services until April 2019. The regulatory process for both SB-493 and AB-1114 was a long process that may have caused delays in adoption of these services amongst pharmacists. In a 2006 study, a majority of California pharmacists reported interest in receiving specialized training needed to provide tobacco cessation counseling. However, in 2018, claims data for the Medi-Cal fee-for-service program showed that there had been little progress in regards to pharmacist furnished NRT in California community pharmacies since payment establishment in 2016. A retrospective cohort study assessed the prevalence of paid claims for this population with a date of service between 2016 and 2017. Only 260 (1%) of the paid claims for NRT products were furnished by pharmacists. The low prevalence of paid claims for pharmacists may have been due to the lack of an established mechanism for pharmacist services at the time of the study or due to a lack of awareness of pharmacists about the new regulations from the Board of Pharmacy and Department of Health Care Services. Previous studies looking at the implementation rates, and associated barriers, of pharmacist-delivered services for NRTs were conducted prior to the establishment of a payment mechanism from Medi-Cal. This study is the first to re-evaluate the landscape now that one of the top barriers has been addressed. The primary objective of this study is to evaluate pharmacists' awareness of recently approved regulations and willingness to deliver NRT services in California community pharmacies. The secondary objective is to assess the implementation rates and perceived barriers of a pharmacist-delivered NRT service, especially in the context of an established payment structure.

Methods: An anonymous electronic questionnaire will be created and emailed using a commercial software system to California pharmacists using lists obtained through schools of pharmacy and state associations. The survey will be administered from December 2019 to February 2020 and will consist of questions to collect information on respondent and practice site demographics and on the knowledge, attitudes, beliefs, and practices of pharmacists. The survey will be developed to include questions utilizing a Likert scale to measure and assess several factors, such as, but not limited to, the knowledge of recently approved regulations for pharmacist furnished NRT and payment for the services, the implementation rates, and perceived barriers to implementation. Results will be analyzed using descriptive statistics.

Preliminary/Final Results: To be determined.

Conclusions/Implications: To be determined.

418-Evaluating Pharmacy Intern's Performance of Entrustable Professional Activities and Scope of Practice in Community Pharmacy Internships. Brooks A, Pamulapati L, Llayton C, Salgado T, Caldas L, Virginia Commonwealth University. Email: brooksar5@vcu.edu.

Objective: The objective of this study will be to assess intern perceptions of current performance of entrustable professional activities (EPAs), as well as their scope of intern practice, during their community pharmacy internship in Virginia. Previous research showed discrepancies between tasks that fall within the scope of community pharmacy intern's legal ability and utilization of interns in community practice. In many instances, interns are performing tasks that are below what the scope of practice allows. Previous studies demonstrated that interns identify clinical tasks, such as ensuring patients are receiving optimal medical treatment, to be most important. While interns report confidence in administering vaccinations, they desire more training in areas such as point-of-care testing and medication therapy management services. Currently, research is lacking that examines the utilization of pharmacy interns within the community setting, as well as their perceptions and preparedness to complete EPAs. A mismatch between the scope of practice and in-practice duties of pharmacy interns may lead to decreased engagement in patient care services. By identifying where pharmacy interns are falling short within their scope of practice, measures can be taken to realign duties to fit the scope of practice and better prepare interns for their future roles as pharmacists.

Methods: This will be a cross-sectional study utilizing a survey to characterize community pharmacy intern experiences, namely with regard to EPAs interns had the opportunity to apply and scope of practice in community pharmacy. Interns from the four School of

Pharmacy programs in Virginia will be invited to participate via email and the survey will be administered using Qualtrics (Provo, UT). Eligible participants must be, at least, 18 years-old and be interns or have had a previous intern experience. The survey will ask participants to identify the degree to which they complete intern-specific tasks described as the level of EPA (e.g., receiving transfer prescriptions over the phone, providing over-the-counter recommendations for patients, etc.) and if they are confident when completing each task (e.g., strongly agree, somewhat agree, etc.). Responses will be provided in a Likert scale. Additionally, students will be asked to rank the importance of each EPA presented in the survey. Once the study is approved by the institutional review board, Schools of Pharmacy will be invited to share the survey with their students. Data will be collected until February 2020. Descriptive statistics will be used to present participants' demographics (e.g., age, sex, race/ethnicity, year in school, years of intern experience, type of community pharmacy), as well as to present agreement with the statements.

Results: Data collection is in progress.

Conclusions/Implications: The results of this study will be disseminated to characterize current utilization of pharmacy interns in the community setting. This information will be used to create benchmarks for programs and pharmacies for utilizing pharmacy interns in dispensing and patient care activities.

419-Assessing risk of burnout and mental wellness in Missouri community pharmacists. Cain J, Schnucks Specialty Pharmacy. Email: jcain2@schnucks.com.

Objective: The primary objective of this study is to determine the risk of burnout and poor mental health in Missouri community pharmacists. Background: Community pharmacists are reporting more burnout and stress in their jobs, leading to increased anxiety and depression. The current day-to-day in community pharmacy is often characterized by pharmacists working long hours and pharmacy being inadequately staffed. The increased pressure on pharmacists, as well as other healthcare providers, leads to burnout. Burnout has been greatly associated with a higher number of medical errors in previous studies. There is no data currently to express the level of burnout or state of mental health of community pharmacists in Missouri. This data is important to obtain in order to determine if patients are at risk for being negatively impacted by a pharmacy error.

Methods: Community pharmacists in the state of Missouri will be asked to complete an anonymous survey indicating what community setting they work in (grocery chain, corporate chain, independent), the average hours they work, and other questions pertaining to their mental health. This well-being survey is important to gauge where Missouri pharmacists stand in their mental health and risk of burnout. The survey will be given via an online survey platform, Qualtrics. There will be demographic information collected, but no specific identifiers that would allow the researchers to know who completed the survey or where they are employed specifically. In order to keep this anonymous, pharmacists will be given individual identifiers, created by using the first three letters of their mothers maiden name and last three digits of their zip code. The survey will be dispersed via email to pharmacists across the state.

Results: Research is in progress. Analysis of the data will involve calculating the total mean score of survey responses out of 140 total points, 2 points per question. All negatively coded questions will be reverse scored in order to obtain an accurate total mean score. A scale has been created to estimate the risk of burnout and mental health status of pharmacists. The ranking is as follows: 0 -70 points = highest risk of burnout and/or poor mental health, 71 -90 points = medium to high risk of burnout and/or poor mental health, 91 -110 points = low to medium risk of burnout and/or poor mental health, 111 -130 points = low risk of burnout and/or poor mental health, 131 -140 points = no risk of burnout and/or poor mental health. The lower total mean score, the higher the supposed risk of burnout and poor mental health. Chi-squared tests will be performed to determine the relationship between the pharmacists' demographic information and their current risk of burnout and poor mental health.

Conclusions: The authors anticipate that the results will reveal that pharmacists who work long hours without breaks are unhappy with their work environment and their mental wellness may also be poor. This is a danger to not only our pharmacists, but patients as well and is an issue needing addressed.

420-Assessing Student Pharmacists' Perceptions and Attitudes Related to Medical Cannabis Counseling in Healthcare Settings. Dotson J, Shenandoah University. Email: jwhetzel16@su.edu.

Objective: The objectives of this research was to determine student pharmacist attitudes and knowledge of current laws and regulations with regards medical cannabis, as well as to determine their comfort level recommending the use of medical cannabis for medical conditions and proper counseling. With the use of medical cannabis on the rise in the United States, there is a dire need for pharmacists to improve their knowledge of medical cannabis available in the market, and thereby ensure optimal counseling to their patients.

Methods: A brief survey questionnaire was sent via email to all the student pharmacists at a particular school of pharmacy (P1-P4 years) to measure attitudes, perception of knowledge and comfort level with counseling of medical cannabis. The total survey response period was two weeks, and an email reminder was sent at the end of the first week. The survey questionnaire was pre-tested to determine the ease of understanding of the questions and also to test the validity of the questions to the survey responses. Informed consents were obtained after receiving IRB approval.

Results: 124 students (n=322 (38.5%)) responded to the survey. Of the recorded responses, 75% of student pharmacists strongly

agreed or agreed that medical cannabis should be made legal in all US states. Furthermore, 91.1% of these students strongly agreed or agreed that pharmacy school curriculum should include education on medical cannabis. When asked about comfort with knowledge in order to counsel patients regarding medical cannabis, its use in specific medical conditions and potential drug interactions, 81 student pharmacists surveyed among 119 who responded to this question, stated they are not comfortable. Lastly, only 27 student pharmacists out of 119 who responded, strongly agreed or agreed that they feel comfort with their knowledge of current Federal and State laws and regulations regarding the use of medical cannabis in healthcare settings.

Conclusions & **Study Implications:** The survey study aimed to gauge the perception and comfort level of student pharmacists in regards to medical cannabis as well as the attitudes toward curriculum on medical cannabis in pharmacy school. The feedback received during the pre-testing of the survey questionnaire addressed preliminary issues and allowed for an improved survey. More than 72% of student pharmacists surveyed said they had not received any education on medical cannabis and only 21% feel any preference to self-educate themselves on medical cannabis. This presents the necessity of finding ways to include education on this topic either during didactic or experiential education. This study has identified the need to address the knowledge gap in the pharmacy setting. It provides an important link between student pharmacists' perceptions regarding medical cannabis, which then translates into quality of practice in the pharmacy settings. As this is ongoing research, future implications are to further the research by continuing the study. The investigators will look for patterns, trends or associations between student demographics, prior education in medical cannabis related content, and their attitudes and comfort in the dispensing, and counseling of patients on medical cannabis.

421-Community Pharmacy Owners' Efforts to Increase Star Ratings. Gardner P, University of South Carolina College of Pharmacy, Cassidy K, Livingston A, Hawthorne Pharmacy. Email: phillipreidgardner@gmail.com.

Objective: The shift to value-based health care led to the creation of a star rating system used by the Centers for Medicare and Medicaid Services (CMS) to measure Medicare plans. Medication-related measures such as adherence are weighted heavily in the star ratings calculations, giving pharmacies opportunities to affect these ratings. Establishing and maintaining high ratings can increase a pharmacy's inclusion in Medicare plans and its ability to receive appropriate reimbursement by a plan; however, little has been published about pharmacy owners' attempts to increase star ratings. The objective of this study is to survey pharmacy owners' efforts to increase star ratings and evaluate which methods are most effective.

Methods: A study will be conducted as a cross-sectional survey distributed to community pharmacy owners in the United States using an online questionnaire tool. The questions will assess owners' knowledge of CMS star ratings, their efforts to increase them and their perceptions of how effective their efforts have been. Data analysis will include comparison of results to pharmacy performance.

Results: Research in progress.

Implications/Conclusions: This study could help pharmacy owners increase star ratings, helping optimize inclusion in Medicare plans and potentially increasing reimbursement.

422-Costs Associated with The Pharmacy Residency Application and Interview Process for Pharmacy Students in Illinois. Hankewych K, Bhargava E, Biszewski M, NorthShore University HealthSystem. Email: khankewych@northshore.org.

Objective: The objective of this project was to investigate the financial and educational costs associated with the application and interview process for Illinois pharmacy students seeking residencies. In 2006, the American College of Clinical Pharmacy suggested that by 2020, the standard of pharmacy practice will be the provision of direct patient care which will require completion of a pharmacy residency program. The American Society of Health-System Pharmacists pharmacy long-range vision document published in 2007 also supports post-graduate pharmacy residency education and suggests that licensure alone will be insufficient to meet the requirements of the changing pharmacy workforce. Pharmacy students are applying to more residency programs however, there is limited published information about financial and educational costs associated with the application and interview process.

Methods: Fourth-year students at the six colleges of pharmacy within Illinois were invited to complete a voluntary anonymous electronic questionnaire if they applied and interviewed for residency programs during the 2018-2019 residency year. Institutional review board approval was obtained. The questions were adapted from a questionnaire published in a similar study that surveyed medical students applying to urology residencies. Demographic information was not collected. Students were asked to specify the number of programs to which they applied and visited for an interview. The number of days spent on the interview trail was reported. Respondents were asked to indicate the amount spent on various components of travel and how they received money to cover interview expenses. Students were requested to estimate their overall educational debt. In addition, students were asked to estimate the time and educational activities that were missed while on the interview trail and to what degree the time missed was detrimental to their overall pharmacy school education.

Final Results: Forty-seven students who applied and interviewed to at least one program were included in this analysis. Fifty-six percent of applicants applied to ten or more programs. The average number of interviews attended was 4.3 and an average of 6.6 days were spent on the interview trail. The reported amount spent ranged from $20 to $3,000. Respondents reported that travel accounted for over half (57%) of their expenses. The most common way respondents paid for expenses were personal assets (60%). The median educational debt of the respondents was $160,000. Ninety-five percent of respondents reported missing rotations,

classes, or the opportunity to study for the pharmacy board exam while interviewing. The majority of students did not find that time missed was detrimental to their education.

Conclusions/Implications: The pharmacy residency application process can be time consuming and involves both financial and educational costs. Residency training is becoming a minimum standard for many direct patient care positions. In order for students to better plan for postgraduate training, more information regarding residency application and interview costs should be made available. Based on the survey results, it appears that the amount spent on residency applications and interviews ranges significantly. Additional studies are needed to better understand the costs associated with the residency interview process.

423-Creation of a Student Pharmacist Training Program to Reduce Opioid-Related Stigma. Hartman S, Pandelaras N, Coley K, McGivney M, Cothrel S, Carroll J, University of Pittsburgh School of Pharmacy. Email: sjh71@pitt.edu.

Objective: The objective of this project is to create and evaluate a standardized training program, linking real-world experiences into the program's learning activities, to reduce student pharmacist stigma surrounding the use of opioids, naloxone, and medication-assisted treatment. The Centers for Disease Control and Prevention (CDC) estimates nearly 50,000 individuals died from prescription or illicit opioid overdose in 2017 alone. Stigma surrounding opioid use disorder may hinder patients from seeking the help they need from providers. This project is funded by a CDC Overdose Data to Action grant.

Methods: In order to guide training program content and format, we will capture and triangulate information from three sources of data: 1) pharmacists practicing in community settings; 2) a comprehensive literature review; and 3) discussions with local topic area experts and individuals in recovery from opioid use disorder. First, we will collect real-world experiences using semi-structured interviews with a purposeful sampling of community pharmacists practicing in "Centers of Excellence in Opioid Dispensing" in Southwestern Pennsylvania. Interview questions will elicit information on pharmacist experiences with opioid, naloxone, and medication-assisted treatment patient care. Second, a comprehensive literature review will be conducted to identify active learning strategies previously used to teach about opioid-related stigma. Finally, discussions with topic area experts and individuals in recovery will generate information on stigma-free communication strategies. Qualitative data generated from interviews and discussions will be captured through detailed note-taking by a minimum of two members of the interview team. A content analysis of the interview and discussion data will be used to inform the training program content. The standardized training program will be implemented within the curricula at two Schools of Pharmacy in Pennsylvania in Spring 2020. Pre-and post-training surveys will be conducted with student pharmacists who participate to evaluate the effectiveness of the training on reducing opioid-related stigma. This research will be submitted to the University's Institutional Review Board.

Results: Research in progress. To date, semi-structured interviews have been conducted with five pharmacists from two community pharmacy locations.

Implications: The development and implementation of this program will inform all student pharmacists graduating in Southwestern Pennsylvania about the importance of reducing stigma related to opioids, medication assisted treatment, and naloxone counseling in the community. The structure of this training will be designed so it can be replicated at other schools or colleges of pharmacy nationwide.

424-Assessing Louisiana Pharmacists' Readiness to Dispense Naloxone and Counsel on Responding to Opioid Overdoses. Hymel M, Roberts C, Hill S, University of Louisiana at Monroe. Email: hymelmd@warhawks.ulm.edu.

Objective: This study sought to assesses if Louisiana pharmacists were ready to dispense naloxone and counsel patients about how to respond to an opioid overdose. Currently, naloxone is available at any Louisiana pharmacy without a prescription under a standing order promulgated by the Louisiana Department of Health. Pharmacies in Louisiana can elect to carry and dispense naloxone to their patients and are not compelled to do so by the standing order. We chose to include any pharmacist licensed to practice in the state of Louisiana for two reasons. First, all members of our profession should be able to counsel patients on the appropriate response to an opioid overdose with naloxone. Secondly, we do not have the resources to visit individual sites to collect data.

Methods: A validated, 24-question survey was adapted for use with permission of Melaragni and colleagues. Pharmacists were asked a wide range of questions about naloxone from the product carried in their pharmacy to the appropriate counseling, storage, and administration of the medication. In the first round of data collection, we administered surveys at the Louisiana Pharmacist's Association Annual Convention in Lake Charles, Louisiana. We plan to continue to collect data at LPA sponsored CE events and progress to online collection after modification of the IRB request.

Preliminary Results: A total of 17 pharmacists responded to the initial data collection. Only 52% of respondents (n=9) have completed formal training on naloxone dispensing and storage while over 64% (n=11) have dispensed naloxone to a patient. While over half of the respondents knew to call 911 during the initial response, no single respondent correctly identified correct sequence of events for an initial response to a suspected opioid overdose. Finally, most pharmacists (70.6%) who responded to our survey indicated that they would benefit from additional training on naloxone and rescue breathing.

Implications: As this study is currently in progress, we cannot make any conclusions about the readiness of Louisiana pharmacists to dispense naloxone and counsel patients to respond to an opioid overdose at this time. However, initial data does suggest that pharmacists may not be able to fulfill the requirement by the Louisiana Board of Pharmacy that requires any pharmacist who

dispenses naloxone to verify that the recipient understands the proper use of the product. As we move forward, it would be beneficial to develop continuing education for pharmacists with a focus on responding to an opioid overdose.

425-The Use of a Mindset and Communication Tool in Licensed Pharmacists: Phase 2 of Psychometric Validation. Lee S, Cooper J, Jeter E, Bradley C, High Point University. Email: Email: slee1@highpoint.edu.

Objective: Contemporary theory of growth mindset in medical education suggests that abilities to view failures in medicine as a learning opportunity may foster an environment to discuss improvements in systematical errors, which in turn, has the potential to reduce future medical errors. Little is known about the mindsets of licensed pharmacists. Our research team has developed and validated the Mindset and Communication Tool to measure student pharmacists' self-views on growth mindset and communication skills. The objective of this study was to conduct psychometric validation of the Mindset and Communication Tool in licensed pharmacists.

Methods: This study used a cross-sectional survey design to examine pharmacist self-view of growth mindset and team communication skills. The Mindset and Communication Tool was distributed by the North Carolina Board of Pharmacy from February 8, 2018 to March 30, 2018. The tool consisted of four sections: team communication (15 items), growth mindset (14 items), description of previous teamwork experience (1 item), and demographic information (8 items). The responses were collected using a 4-point Likert scale of agreement. The total sum of the score was calculated that ranged from 29 to 116. Collected data were analyzed for descriptive statistics, internal consistency reliability and validity using exploratory factor analysis. An open ended question about the previous teamwork experience was analyzed by a qualitative researcher (EJ) using a thematic analysis.

Results: Of the 12,402 pharmacists with active license in North Carolina, 507 participants completed the survey (4% response rate). Respondents who have opened the survey link and did not complete the survey were excluded from the analysis (n=163). Participants were on average 47.8 years old, mostly white (90%), and predominantly female (61%). The primary pharmacy work setting represented a diverse group including community pharmacy (43.3%) and health systems (38.3%). The average tool score was 62±4.1 out of maximum 116 points. Reliability of the scale using internal consistency revealed a Cronbach's alpha of 0.39. Exploratory factor analysis resulted 3 factor extraction accounting for 50% variance. A total of 263 valid responses were recorded in an open-ended question about describing a previous teamwork experience (52% response rate). A thematic analysis revealed comments that are evaluative (46%) and descriptive (54%) in nature. Among those who have provided evaluative comments, 47.5% of participants described having a positive experience in teamwork within a pharmacy practice setting.

Implications/Conclusions: This study was among the first to examine pharmacists' self-view of growth mindset and team communication skill using a validated tool developed by a team of clinical pharmacists and researchers. The results suggest that the Mindset and Communication Tool can be used as a reliable and valid tool for measuring licensed pharmacists' self-view on growth mindset and team communication skills. This was a similar finding to the Phase 1 of the tool validation study using student pharmacists' data. Future research is needed to focus on the use of this validated tool in a focused practice setting related to workplace culture and medical error.

426-Psychometric Validation of a Tool to Measure Self-views of Growth Mindset and Team Communication Skills in Student Pharmacists: Phase 1 Study. Lee S, Cooper J, Jeter E, Bradley C, High Point University. Email: slee1@highpoint.edu.

Objective: The objective of this study was to conduct psychometric validation of the Mindset and Communication Tool that was used to assess growth mindset and team communication skills in student pharmacists.

Methods: A prospective, pre-post survey design, validation study was conducted via Qualtrics from September 2017 to December 2018. The Mindset and Communication Tool was developed by two clinical pharmacists (CB, JC) and a qualitative researcher (EJ). The tool adopted core concepts of intelligence studies of growth mindset (Dweck et al.) and team communication (Pollard et al.). The tool was composed of two hypothesized domains: (1) 14-item Growth Mindset Scale, and (2) 15-item Team Communication Scale; using a 4-point Likert scale of agreement. The survey score was calculated based on the total sum of the score, that ranged from 29 to 116. The tool was administered to two cohorts of student pharmacists in first semester of the Doctor of Pharmacy curriculum. Specifically, students in the Class of 2021 and the Class of 2022 completed the survey once at the beginning of the semester (baseline) and once again at the end of the semester (follow-up). Student pharmacists in Class of 2022 received a multi-week workshop on team communication and conflict resolution while students in the Class of 2021 did not receive the multi-week team communication workshop. The results of the student pharmacists' data were used for psychometric validation of the tool. Collected data were analyzed for descriptive statistics, reliability (internal consistency, test-retest) and validity (exploratory factor analysis, responsiveness, convergent). Responsiveness of the tool was measured by changes in the total score between the two classes.

Results: A total of 120 participants completed both baseline and follow-up surveys. Reasons for non-participation included refusal to provide study consent (n=6), missing either baseline or follow-up assessments (n=6), and duplicated participant input (n=1). Participants were on average 23 years old, mostly white (67.5%), and predominantly female (63.3%). About 65% participants indicated of having pharmacy work experience; such settings include community pharmacy (50%), health-system (11.7%), and others (3.3%). Reliability of the scale using internal consistency metrics revealed a Cronbach's alpha of 0.8. Test-retest reliability using intra-class correlation coefficient yielded a value of 0.81 ($p<0.05$). Exploratory factor analysis resulted in a two-factor solution accounting for 67% variance. Responsiveness of the tool revealed a decrease in the tool score in the group that participated in the workshop (+2.0 vs -4.9,

p<0.05). Convergent validity of the tool revealed no apparent correlation between the tool score and the course grade.

Conclusions/Implications: The results suggest that the Mindset and Communication Tool can serve as a reliable and valid tool for measuring student pharmacists' self-views on growth mindset and team communication skills. Similar to the findings in the literature, growth mindset and team communication skills are stand-alone concepts that may not be captured in academic success/performance. Future research is needed to focus on the use of this validated tool to measure licensed pharmacists' growth mindset and team communication skills.

427-Illinois Pharmacists and Cannabinoid (CBD) Oil: A Survey on Knowledge and Educational Needs. Link K, APhA-ASP, Ferguson M, Southern Illinois University Edwardsville School of Pharmacy. Email: kalink@siue.edu.

Objective: The objective of this research is to evaluate pharmacists' knowledge of over-the-counter (OTC) cannabinoid (CBD) containing products, and assess pharmacists' interest in additional education about these products.

Methods: This is an observational cross-sectional study that used a quantitative survey to collect information about Illinois pharmacists' knowledge about CBD containing OTC products. Survey questions were based on prior research and pilot tested for clarity and completeness. The survey collected demographic information and three sections related to CBD-OTC products: 1) product knowledge, 2) concerns and competency in selling CBD products, and 3) current and future educational needs. Two state-based pharmacy organizations collaborated to distribute the survey online on August 15, 2019, with two reminders, and a close out on September 30, 2019. The research was declared exempt by the Institutional Review Board of the affiliate school. Descriptive statistics will be used to describe all data collected.

Preliminary Results: As of September 24, 2019, 178 participants completed the survey. Majority of the respondents (60.7%) were 31-60 years of age, 22.5% have worked for 11 to 20 years as a pharmacist with a similar amount working less than 5 years (21.4%). About 33% work in hospital-based practice setting and 33% work in a community-based setting. Most pharmacists (64%) reported that their patients asked about the safety or efficacy of cannabidiol containing products, but almost 80% responded that they were not prepared to provide medication counseling to patients who use OTC CBD products. Majority of respondents reported limited competency in OTC CBD products pharmacotherapy (53.1%), pharmacokinetics (64%) and pharmacodynamics (63.6%) knowledge. Almost all respondents indicated that information about state (90.3%) and federal (89.2%) laws related to CBD, and safety (99.4%) are preferred topics for future education.

Implication/Conclusions: Consumers are seeking information about CBD containing products; however, many pharmacists do not feel prepared when it comes to being the drug expert for these products. Educational opportunities are necessary for pharmacists to become more comfortable and knowledgeable regarding safe and effective use of CBD-OTC containing products.

428-Engagement in Hepatitis C and HIV Prevention: Community Pharmacists' Knowledge and Attitudes Regarding Non-Prescription Syringe Dispensing Legislation. Metcalfe D, Hagemeier N, ETSU Gatton College of Pharmacy. Email: metcalfed@etsu.edu.

Objective: Since 2010, the incidence of acute Hepatitis C Virus (HCV) infections in the U.S. has nearly quadrupled. Re-use and sharing of syringes among people who inject drugs (PWID) is a significant contributor to increased rates of HCV transmission and a risk factor for HIV infection. Community pharmacists are uniquely positioned to offer harm reduction services that lower the transmission of HCV/HIV by providing sterile syringes to PWID. However, legislation on non-prescription syringe dispensing varies by state and differences in individual pharmacists' interpretation and attitudes regarding these laws may impact their willingness to participate in harm reduction services. Little is known about the impact of these factors on pharmacist engagement with harm reduction services in central Appalachia, a region particularly hard-hit by the opioid epidemic. Objectives: The overall objective of this project is to qualitatively evaluate open-ended responses collected as part of a survey administered to community pharmacists in three central Appalachian states in order to determine: 1) pharmacists' knowledge and attitudes regarding their state's non-prescription syringe dispensing laws; and 2) the correlation of knowledge and attitudes about state legislation to pharmacists' intent to sell syringes to PWID.

Methods: Qualitative data will be extracted from a dataset generated from a telephonic community pharmacist survey on non-prescription syringe attitudes and behaviors conducted between April and June 2018. During initial data collection, survey staff transcribed verbatim responses to three open-ended survey items on respondents' knowledge and attitudes regarding their state's non-prescription syringe dispensing laws. Data will be analyzed using a general inductive approach. A single investigator will code all qualitative data and a second investigator will code data from a random selection of 10% of the respondents in order to develop themes through consensus. A descriptive analysis will compare syringe law knowledge and attitude thematic categories to respondents' intent to sell syringes to PWID.

Preliminary Results: Survey responses were obtained from pharmacists practicing in 391 community pharmacies (51% response rate) in the central Appalachian study region. Preliminary qualitative analysis suggests underlying differences in pharmacists' willingness to sell syringes to PWID based on their non-prescription syringe law knowledge and attitudes, as well as differences in pharmacists' non-prescription syringe law attitudes between the three states in the study region.

Implications: Presentation of the findings will encourage pharmacists to reflect on personal attitudes and interpretation of state-specific legislation as factors that may influence participation in an evidence-based harm reduction strategy for prevention of HCV/HIV

transmission. This study offers preliminary results that will serve as a basis for larger studies and interventions aimed at reducing ambiguity in pharmacists' interpretation of non-prescription syringe dispensing laws and encouraging pharmacists to counter the spread of HCV/HIV in an evidence-based manner.

429-Kentucky Pharmacists' Perceptions on Provision of Hormonal Contraception. Miracle D, University of Kentucky, Kebodeaux C, Fink III J, Freeman P, University of Kentucky College of Pharmacy. Email: dustin.miracle@uky.edu.

Objective: The objectives of this study are 1) to gauge Kentucky pharmacists' interest in providing prescription hormonal contraception and OTC emergency contraception services via a board-authorized protocol; and 2) to identify perceived benefits of and barriers to providing hormonal contraceptive services. Due to the increasing prevalence of unintended pregnancy, several states have enacted legislation authorizing pharmacists to prescribe hormonal contraception via a statewide standing order or protocol. While Kentucky pharmacists recently gained authority to provide protocol-driven care for 13 authorized conditions, the provision of prescription hormonal contraception services is not currently authorized. Similarly, although protocol-driven care for over-the-counter (OTC) emergency contraception could be provided under Kentucky's regulation, one specific to OTC emergency contraception has yet to be approved by the Kentucky Board of Pharmacy.

Methods: A link to a voluntary survey will be distributed via email to approximately 1200 Kentucky pharmacist members of the Kentucky Pharmacists Association, the Kentucky Society of Health-System Pharmacists, and the Advancing Pharmacy Practice in Kentucky Coalition. The survey will collect: 1) demographic information, including practice characteristics; 2) opinions regarding the provision of prescription hormonal contraception services; 3) opinions regarding the provision of OTC emergency contraception services; and 4) perceived benefits of and barriers to providing contraception services via a board-authorized protocol. The survey will be administered via REDCap and data collected anonymously over a 4-week period, with two additional survey reminders being sent out at 1-week intervals after the initial contact email. Data will be analyzed using descriptive statistics. Survey response analysis will be stratified by practice characteristics whenever possible. Regression models examining response differences for items of interest will be fit using respondent and practice characteristics as control variables.

Results: Research in progress.

Conclusions: Research in progress.

430-Entrepreneurial Traits Associated with Entrepreneurial and Intrapreneurial Intentions among Student Pharmacists in Iran. Mirzayeh Fashami F, Mahan Business School, Tehran, Iran, Nili M, Shaikh N, Department of Pharmaceutical Systems and policy, West Virginia University, Morgantown, Wv, USA, Vasheghani Farahani A, Pharmaceutical Management and Economics Research Center, University of Medical Science, Tehran, Iran, Dwibedi N, Department of Pharmaceutical Systems and Policy, School of Pharmacy , West Virginia University , Morgantown , WV , USA, Madhavan S, System College of Pharmacy, University of North Texas Health Science Center. Email: Fatemeh.mirzaei@sbmu.ac.ir.

Objective: The objective of this study is to identify factors and entrepreneurial traits associated with entrepreneurial and intrapreneurial intentions among student pharmacists in Iran by using the Persian version of Entrepreneurial-Intrapreneurial Pharmacist Questionnaire (Persian-V-EIPQ). Historically, training future entrepreneur pharmacists as potential pharmacy owners is one of the main goals of pharmacy education in Iran. Achieving this goal is vitally important for the health care system in Iran since only pharmacists are legally eligible to get a license for establishing and running a pharmacy. Moreover, training intrapreneur pharmacists is getting more important to meet the demand of a growing pharmaceutical industry in Iran. Given the importance of training future entrepreneur or intrapreneur pharmacists in Iran, there is a need to identify which factors are associated with entrepreneurial and intrapreneurial intentions among student pharmacists in Iran.

Methods: Based on a standard back-translation procedure for questionnaire translation, the Entrepreneurial-Intrapreneurial Pharmacist Questionnaire (EIPQ) was first translated from English to Persian. The EIPQ is an English questionnaire for measuring nine entrepreneurial traits (locus of control, innovativeness, autonomy, risk taking propensity, proactiveness, achievement motivation, people liking, problem-solving and leadership self-efficacy), and entrepreneurial intention as well as intrapreneurial intention among student pharmacists. After back-translation, the Persian-EIPQ questionnaire was tested in a pilot sample of 30 student pharmacists to determine readability and interpretation. The paper-based Persian-EIPQ questionnaire so developed was tested in a convenience sample of 521 PharmD students in five main public and private pharmacy schools in Iran. All the participants were in their 4th, 5th or 6th year of pharmacy studies. The entrepreneurial traits questionnaire were evaluated using exploratory factor analysis with varimax rotation. Internal consistency was examined using Cronbach's alpha. The association of demographics and educational variables and entrepreneurial traits with entrepreneurial and intrapreneurial intentions were determined using multiple linear regression models with significance level set at $p < .05$. All data analysis were conducted by using SPSS 23.0.0.0.

Results: A total of 504 surveys, 97% of the received questionnaire, were analyzed. A majority of the participants were female (74.0%), between 22 and 25 years old (83.1%), single (81.7%), attended private school (59.5%), and did not have any entrepreneur in their family (52.6%). The factor loadings of all items in the scales were greater than 0.4. The Cronbach's alphas for all the scales ranged between 0.67 and 0.92. Entrepreneurial intention had a positive and significant association with risk taking propensity ($p<.01$), leadership self-efficacy ($p<.01$), autonomy ($p<.01$), achievement motivation ($p<.01$) and having an entrepreneur in the family ($p<.01$). Intrapreneurial intention had a positive and significant association with risk taking propensity ($p<.01$), leadership self-efficacy ($p<.01$),

people liking (p=.01), being female (p=.02), attending a private school (p<.01)) and having an entrepreneur in the family (p<.01).

Implications/Conclusions: These findings suggest that the Persian-EIPQ is a valid and reliable questionnaire. The Persian-EIPQ can be successfully used among Persian speaking student pharmacists. Based on the findings, student pharmacists with higher levels of risk-taking propensity and leadership self-efficacy may are more likely to have greater levels of entrepreneurial and/or intrapreneurial intentions.

432-Community Pharmacist Preceptors and Their Knowledge, Experience, and Perceived Intent to Recommend Cannabidiol Products for Patient Use. Nichols M, Arnett S, Walgreens/Purdue University, Marchionda R, McDonald M, Butler University, Miller M, Purdue University College of Pharmacy. Email: magnew@purdue.edu.

Objective: The objectives of this study are to 1) characterize community pharmacist preceptors' clinical and legislative knowledge on over-the-counter and prescription cannabidiol (CBD) products, CBD product experience, and perceived intent to recommend CBD products for patient use and 2) identify desired CBD resources for pharmacists. CBD has gained popularity amongst medical professionals for its treatment potential in a variety of health conditions. Community pharmacists in particular are positioned to have significant exposure to both over-the-counter and prescription CBD products. State and federal laws involving the use and legality of CBD have changed over the last decade. With expanding research and evolving legislation, there is a need to gauge a national sample of pharmacists' understanding of clinical and legal considerations for CBD products.

Methods: This cross-sectional descriptive study will include pharmacists 18 years of age or older who read English, maintain an active pharmacist license, currently practice in community pharmacies, and actively precept for accredited colleges of pharmacy across the United States. All pharmacists meeting inclusion criteria will be eligible to complete a web-based survey assessing demographics, CBD product experience, clinical and legislative CBD knowledge, perceived intent to recommend CBD products for patient use, and desired CBD resources. Questions to assess intent will utilize a 5-point Likert scale and be framed around the Theory of Planned Behavior, which hypothesizes that intent to perform a behavior is influenced by (1) attitude towards the behavior, (2) subjective norms, and (3) perceived behavioral control. To assure quality and clarity of survey items, the survey will be pilot-tested by pharmacists not meeting inclusion criteria. Respondent recruitment will occur in two phases. Phase I: contact experiential education coordinators from one college of pharmacy within each state to assess willingness for survey dissemination to their college's preceptors. Phase II: survey dissemination by recruited experiential offices. Initial survey dissemination will occur in January 2020 with repeat reminder emails for a 12-week survey duration. Respondents will have the opportunity to be enrolled in a gift card raffle upon survey completion. Data from multiple-choice items will be evaluated using descriptive statistics and data from open-ended items will be evaluated using qualitative analysis. The study protocol will be submitted to the Purdue University Institutional Review Board with anticipated approval by November 2019. Data collection will occur from January 2020 to March 2020.

Preliminary/Final Results: Pending.

Conclusions/Implications: Pending

433-Which Personality Traits Among Student Pharmacists are Associated with Interest in Becoming a Pharmacist Provider? Nili M, Shaikh N, Dwibedi N, West Virgina University, Anyanwu P, University of Houston, Kavookjian J, Auburn University, Nadpara P, Virginia Commonwealth University, Chen A, Cedarville University, Kamal K, Duquesne University, Madhavan S, University of North Texas System College of Pharmacy. Email: mn0044@mix.wvu.edu.

Objective: The main objective of this study is to identify which personality traits are associated with interest in becoming a pharmacist provider (IBPP) among student pharmacists in the United States. The personality traits assessed in this study were commonly associated with entrepreneurism and included: locus of control, innovativeness, autonomy, risk-taking propensity, pro-activeness, achievement motivation, people liking, problem solving, and leadership self-efficacy. In recent years, national pharmacy associations, particularly, the American Pharmacists Association, have been working toward including pharmacists on the federal list of recognized healthcare providers. The Pharmacy and Medically Underserved Areas Enhancement Act has been introduced to add pharmacists to the list of recognized health care providers to deliver patient care in medically underserved communities and be eligible for reimbursement for patient care activities. If this act passed becomes law, it would allow pharmacists practicing in the underserved areas to collaboratively work with physicians and bill the Medicare Part B for their services. As current student pharmacists are the next generation of pharmacists, it is important to identify which personality traits are associated with IBPP so that such pharmacists can be identified and nurtured to take on greater patient care roles.

Methods: This cross-sectional survey was conducted in second (P2) and third (P3) year student pharmacists in a convenient sample of six private and public pharmacy schools in the United States. All the personality traits were from previously validated questionnaires. Four items were used to measure the level of IBPP among student pharmacists. Exploratory factor analysis was used to determine any underlying dimensions. The reliability of the measures was determined using Cronbach's coefficient alpha. Multiple linear regression, adjusted with sociodemographic factors, was used to assess the association between personality traits and IBPP. SPSS 25.0 for Windows was used for all the data analysis.

Results: A total of 514 surveys, including of 261 P2 and 253 P3 students were analyzed. Cronbach's alpha values for all the study constructs ranged from 0.65 to 0.92. A majority of the sample were female (65%), between 18 and 25 years of age (85%), white (70%),

single (79%), having at a least Bachelor's degree (55%), and having an annual family income of less than $30,000 (64.8%). Overall, student pharmacists had a high IBPP with a mean + SD score of 5.80+ 1.04 in a scale of 1 (strongly disagree) to 7 (strongly agree). Multiple linear regression indicated a significant association between IBPP and autonomy (p<.01), risk-taking propensity (p<.01), and internal locus of control (p=.03). Furthermore, IBPP was significantly higher among females (p<.01), those 25 years of age and younger (p=.01), and those with at least a Bachelor's degree (p<.01).

Conclusion/Implications: This study is the first study evaluated interest in becoming a pharmacist provider among a large sample of student pharmacists in the United States. Based on the findings, the level of IBPP was higher among student pharmacists with higher trait levels of autonomy, risk-taking propensity, and internal locus of control -all traits associate with entrepreneurism.

434-State Recovery Programs for Pharmacy Personnel and Students with Substance Use Disorders: A Nation-Wide Survey Investigating Program Policies, Methods, and Treatment Options. O'Rourke E, University of Rhode Island. Email: eorourke@my.uri.edu.

Objective: Exposure to unique occupational hazards places pharmacists, pharmacy students, and technicians at increased risk of developing substance use disorders (SUDs). Increased accessibility to controlled substances, perceptions of invincibility, shame, inadequate education on addiction, and stressful work environments all perpetuate SUD development and continuation in pharmacy personnel. The Pharmacy Recovery Network (PRN) is an online repository of state substance use recovery programs available to pharmacy professionals. Of note, a 2017 study (Light KE, et al) identified 46 state recovery programs for pharmacy professionals and gathered their most accurate contact information. Despite these advances, the programs' design and the specific resources offered have not been researched. This study will survey state recovery programs in order to analyze the demographics of enrollees, as well as existing methods and standards of care for treating pharmacy professionals with substance use disorders. In addition, the survey will identify, catalog, and characterize state-based pharmacist assistance programs that limit, permit, and/or encourage opioid agonist medication regimens for opioid use disorder (OUD) among pharmacists in their programs, and determine requirements for pharmacists to return to practice if stabilized and maintained on these medications.

Methods: Contact information for the 46 state recovery programs will be gathered using the USAPRN website and Light KE, et al. Additionally, web-based searches utilizing the criteria described in Light KE, et al will be used to identify updated program information that has occurred within the last three years. Preliminary outreach to programs will be conducted via phone twice to affirm inclusion in the study. An IRB-approved electronic survey (Qualtrics, Inc, Provo, Utah) will be sent to each program by email. Survey response formats will be yes or no, multiple choice, and open-ended. The survey will collect the following demographics: current number of enrolled participants, designation of enrollees (pharmacist, pharmacy technician, pharmacy student), age and sex of enrollees, and number of enrollees receiving care for OUD and other SUDs. The survey will determine the structure of the programs and their terms of enrollment, including the use of psychoactive substances in recovery. Questions will address program services, drug screening protocols, available non-pharmacologic treatment options, as well as pharmacologic options including medications for opioid use disorder (MOUD) and other substance use disorders. The survey will also investigate career implications for enrollment in a substance use recovery program and criteria for rehabilitation and return to practice. Descriptive statistics will be utilized to report on survey response results.

Results: Research in progress.

Conclusions: Research in progress. Results from this study may contribute to the normalization of MOUD in state programs for pharmacy personnel and students with opioid use disorder. Additionally, this study may be used to implement policy and/or legal changes to rectify any identified gaps in care. Improving substance use recovery programs for pharmacy personnel will maximize patient safety, access to evidence-based treatment for professionals, and preserve the integrity of the pharmacy profession and dignity of participants.

435-Evaluation of Student Pharmacists' Attitudes and Perceptions of Pharmacist Contraception Prescribing in Indiana. Papineau J, Thoma L, HealthLinc / Purdue University College of Pharmacy, Beal J, Purdue University College of Pharmacy, Vernon V, Butler University College of Pharmacy / Veteran Health Indiana, Ades R, Manchester University College of Pharmacy, Wilkinson T, Riley Children's Health-Indiana University Health / Indiana University School of Medicine, Eppley H, Van A, Hettinger K, Butler University College of Pharmacy, Meredith A, Purdue University College of Pharmacy / Eskenazi Health. Email: hpapineau@healthlincchc.org.

Objective: The objective of this study is to assess attitudes of pharmacy students within Indiana towards expanding pharmacists' scope of practice to include pharmacist-prescribed hormonal contraceptives. Currently, the District of Columbia and nine states allow pharmacist prescribing of contraception without the need for a collaborative practice agreement. Indiana does not currently have this type of statute in place. Expanding pharmacy contraceptive prescribing increases women's access to vital reproductive health services and allows pharmacists to further demonstrate their importance on the healthcare team. The specific aim of this study is to characterize student pharmacists' attitudes and perceptions toward pharmacist contraception prescribing in Indiana.

Methods: This cross-sectional, non-experimental study is being conducted via an anonymous, electronic, survey utilizing Qualtrics XM, a web-based survey platform. This research received IRB exemption from Purdue University's Human Research Protection Program on September 4, 2019. Data will be collected over the 4-week period of September 16, 2019 through October 11, 2019. Faculty at each Indiana College of pharmacy approved and facilitated survey distribution to enrolled professional students. A reminder email was sent

to students two weeks following initial distribution. Students at Butler and Manchester Universities received the survey via a direct email, while students at Purdue received access to the survey via a link included within a weekly, electronic newsletter. To be eligible for participation, all students must be enrolled at a pharmacy program within Indiana and have a graduation date from 2020 through 2023. The survey includes 17 researcher-constructed items aimed at assessing pharmacy students' attitudes and perceptions about pharmacist-prescribed hormonal contraceptives, including potential reservations with such expansion of practice, comfort counseling on specific hormonal contraceptive methods (e.g.; ethinyl estradiol/norelgestromin patch, ethinyl estradiol/etonogestrel vaginal ring, etc.), and opinions on adequacy of education received surrounding hormonal contraceptive methods and related patient counseling. Demographic data (e.g., graduation year) will also be collected. Data analysis will occur through the use of descriptive statistics, with Chi-squared t-tests used to determine differences. Responses will be analyzed and compared based on demographic data and completed education regarding hormonal contraceptives. Logistic regression will be performed to determine how various demographic differences between students explains their perceptions on the benefit of pharmacist-prescribed hormonal contraceptives and interest in providing this service in the future.

Results: Surveys were distributed to student pharmacists currently enrolled at three pharmacy programs within Indiana (Purdue University, Butler University, Manchester University). Data collection is currently underway. Conclusions/Implications To be determined pending data analysis.

436-Attitudes Toward Oral Contraception Classification: A Survey of North Carolina Pharmacists. Parry R, Scott M, UNC Eshelman School of Pharmacy, Tak C, UNC Eshelman School of Pharmacy and UNC Health Sciences at MAHEC, Seamon G, UNC Eshelman School of Pharmacy and MAHEC. Email: rparry@unc.edu.

Objective: Almost half of all pregnancies in the United States in 2011 were unintended. Barriers to contraception access prevent consistent and appropriate contraception use, and they include running out of refills and not being able to reach a clinician. As one of the most accessible healthcare professionals, pharmacists are uniquely poised to increase access to self-administered hormonal contraception. Ten states or jurisdictions have passed laws that allow pharmacists to prescribe hormonal contraceptives as of May 2019. Further, the American Medical Association supports over-the-counter (OTC) access to oral contraceptives. The American Pharmacists Association supports pharmacist prescriptive authority models to increase patient access to care, but does not have policy about OTC contraception. Pharmacist attitudes of over-the-counter access to contraception has not been studied. The objective of this study was to examine North Carolina pharmacists' attitudes toward the categorization of oral contraceptives.

Methods: This study was a secondary analysis of cross-sectional, web-based survey of a convenience sample of licensed pharmacists in North Carolina. Pharmacist demographics and characteristics of their primary pharmacy location were collected. The primary outcome was pharmacist responses to the question, "Of the following statuses, in which do you believe oral hormonal contraception should be categorized?" Responses were categorically analyzed as "prescription-only," "pharmacist-prescribed," "behind-the-counter, without a prescription," and "OTC, with or without age restrictions." Descriptive statistics were calculated, and a preliminary adjusted multinomial regression model was used to examine predictive effects of pharmacist demographics on contraception categorization attitudes.

Results: Of the 754 pharmacists who responded and consented to the survey, 587 answered the primary question. Of those, respondents were primarily female (66%, n=386), most were graduates of a North Carolina school of pharmacy (63%, n=364), approximately half were younger than 40 years (54%, n=316), and approximately half had been a pharmacist for fewer than 11 years (48%, n=283). Twenty-eight percent (n=163), 39% (n=227), and 30% (n=174) pharmacists worked in urban, suburban, and rural areas, respectively. Thirty-eight percent (n=225) primarily practiced in a community pharmacy. Twenty-five percent (n=147) pharmacists believed that oral hormonal contraception should remain prescription-only. A majority of pharmacists believed that it should be pharmacist-prescribed (51%, n=301). Sixteen percent (n=92) and 8% (n=47) believed that it should be behind-the-counter and OTC, respectively, with no prescription requirement. The adjusted multinomial regression model found that completion of a residency (post-graduate year 1 and/or 2) predicted pharmacist belief that contraction should be classified as pharmacy-prescribed instead of prescription-only (OR=2.3, 95% CI 1.2-4.5). Age, gender, graduating from a North Carolina school of pharmacy, and primarily working in a community pharmacy were not significant predictors of classification of contraception attitude being different from prescription-only, controlling for pharmacist demographics.

Conclusions/Implications: The majority of pharmacists indicated support for greater access to oral contraceptives at the pharmacy, and completion of a residency predicted support of pharmacist-prescribed oral contraception classification. Future investigations should examine whether classification belief is associated with implementation.

437-Evaluation of Community Pharmacists' Ability to Identify and Address Mental Health Warning Signs in Patients. Patterson L, Karpman L, Kehl K, Kojima P, Tennyson N, Schnuck Markets Inc., Took R, Schnuck Markets Inc. & St. Louis College of Pharmacy. Email: pattersonlacy@gmail.com.

Objective: The primary objectives of this study are to (1) assess community pharmacists' ability to recognize mental health warning signs, and (2) evaluate the willingness of community pharmacists to offer mental health care beyond dispensing of mental health medications. Mental illness affects tens of millions of people in the United States each year. There are many barriers to care for patients with mental illness, and the discomfort felt by healthcare professionals in interacting with people with mental illness can be

an unintentional yet substantial barrier to care. Pharmacists have many opportunities to positively impact individuals with mental illness and can play a pivotal role in mental health first aid, better patient care outcomes, and improved patient satisfaction, all of which isn't possible until the barriers to pharmacist engagement with individuals with mental illness are identified and removed.

Methods: A company-based cross-sectional survey was electronically distributed to 297 pharmacists within Schnuck Markets Inc. across 5 states: Missouri, Illinois, Indiana, Iowa and Wisconsin. Study participants were practicing community pharmacists with direct patient care roles. The survey included measurements of the pharmacist's ability to recognize mental health warning signs, the pharmacist's capacity to address mental health warning signs within the pharmacy, Likert-type scale questions assessing personal attitudes toward providing care to patients with mental health conditions, and prior experience or training in mental health. Case-based assessments were included in the survey to facilitate responses that reflect real life application. In addition, a mental health provider readiness tool was used to evaluate the pharmacist's willingness to participate in provider mental health first aid training. Participants were also asked demographic questions and how many years they have been practicing in community pharmacy.

Results: Research is in progress. Descriptive and inferential statistics will be used to analyze results of the survey.

Implications/Conclusions: Addressing pharmacists' perceptions of mental health is the first step in equipping all members of the healthcare team with mental health first aid training. Additional research into implementation of mental health first aid training programs for community pharmacists is required to determine its impact on patient outcomes.

438-Bridging Health Disparities: A National Survey of Ambulatory Care Pharmacists in Underserved Areas. Payne M, Fink R, Kosirog E, Saseen J, University of Colorado Skaggs School of Pharmacy and Pharmaceutical Sciences. Email: morgan.payne@cuanschutz.edu.

Objective: This study aimed to identify characteristics of ambulatory care pharmacists that pursue and maintain employment within underserved areas. Medical training within underserved areas can help diminish healthcare disparities in these areas. Despite an increase in number of programs targeting physicians to work with medically underserved communities, there remains a shortage of medical providers, especially in primary care. Clinical pharmacists working within medically underserved communities in the United States can help fill gaps in care needed among vulnerable populations.

Methods: An original survey was created by research team members that evaluated traits of ambulatory care clinical pharmacists in underserved areas as well as their drivers for seeking and maintaining employment. The online survey was distributed to national pharmacy organization list servs as well as informal list servs that have a special interest group of ambulatory care soliciting pharmacists working in medically underserved areas to complete the survey. Clinical pharmacists were included in data analysis if they currently provide care in a setting that the United States Health Resources and Services Administration (HRSA) designates a medically underserved area, to medically underserved populations, or in a health professional shortage area. Pharmacists were excluded if they have been employed in a medically underserved area for less than 3 months. A clinical pharmacist was defined as a pharmacist that spends a majority >50% in non-dispensing roles and, per the American College of Clinical Pharmacy (ACCP) definition, provides patient care that optimizes medication therapy, promotes health, and disease prevention.

Preliminary/Final Results: In total, 111 surveys were included in data analysis. A majority of respondents were White (93/111), non-Hispanic (98/111), females (82/111) with English as their only language spoken (75/111). Approximately 75% of pharmacists completed one-or two-years of residency training, and over 65% of pharmacists are board certified. A majority of pharmacists completed some form of clinical experience or specialized training focused on underserved care prior to their position. Almost all pharmacists reported practicing under collaborative practice agreements/protocols to manage chronic disease states at their sites. The top three drivers for pharmacists accepting their clinical position as well as staying at their job are passion for caring for underserved populations, the presence of a faculty appointment, or the freedom and flexibility of advanced clinical roles. Presence of a loan repayment incentive and research opportunities did not appear to be important in a pharmacist's decision making to initially accept their job nor maintain their employment.

Conclusions/Implications: From the sample of surveys received, a wide range of racial, gender, and linguistic diversity is not present in ambulatory care clinical pharmacists working in medically underserved areas. In addition, there is a correlation between early experiential or specialized training in underserved care and pharmacists pursuing employment in these areas. A further analysis of these same respondents will explore pharmacists' preparedness for their positions and various factors that may impact their perception of readiness.

439-Scaling Technician Product Verification (TPV): Developing an Implementation Strategy for a Nationwide Grocery Chain Pharmacy. Saling J, UTHSC, Rein L, Atchley D, Kroger. Email: jsaling1@uthsc.edu.

Objective: The primary objective of this study is to report on facilitators and barriers to TPV implementation, and to develop an "implementation strategy" for successfully scaling technician product verification (TPV) into future practice sites. TPV (a.k.a. tech-check-tech) has been proven to be safe in multiple geographical community pharmacy settings, including Tennessee. In a changing marketplace, providing patient access to community pharmacist-delivered clinical pharmacy services is challenging. TPV represents one way to maximize existing workflow processes in place by shifting non-judgement-based skills to technicians. At its core, TPV programs are intended to enable pharmacists to spend more time on clinical services and patient-centered activities and current evidence to date supports this aim.

Methods: The proposed study will use mixed-methods (surveys, interviews, and direct observation) to ascertain facilitators and barriers to implementation and to subsequently develop a scalable implementation strategy with the aim to accelerate TPV scalability across a large grocery pharmacy chain in states where it is permitted. Pharmacies participating in a pilot study will serve as study subjects for the mixed-methods analysis. One-on-one staff interviews and observations will provide qualitative data to identify facilitators and barriers to TPV. Data will be compared between study pharmacies who have successfully implemented TPV versus unsuccessfully to determine the most salient factors in TPV implementation. Subsequently, a survey will be developed based on these qualitative results to gather perceptions on a variety of "implementation strategies" which would make use of identified facilitators and work to overcome identified barriers.

Results: Research in progress. Final results will be reported at APhA2020.

Implications: Although TPV's utility as a means for safely increasing access to clinical pharmacy services has been established in the literature, this alone is not enough to scale this innovation nationwide. Studies show that it takes 17 years for an evidence-based practice to take hold in a clinical setting. Literature relating to TPV and its scalability has centered mostly on the institutional setting, leading to questions on how to best implement and scale TPV in a community setting. Furthermore, although perceptions of TPV by both pharmacists and technicians are positive regarding its acceptability, appropriateness, and feasibility, several barriers to its implementation and scalability within pharmacy workflow have been uncovered. Studying key factors related to successful implementation of TPV would result in a more rapid and standardized scaling across the community pharmacies in states where it is permitted.

440-Evaluation of Pharmacists' Perception of and Preparedness for an Expanded Role in Pharmacy-Based Tobacco Cessation Programs in West Virginia. Schutt E, Capehart K, Elswick B, West Virginia University. Email: emma.schutt@hsc.wvu.edu.

Objective: The objectives of this study are to (1) assess West Virginia pharmacists' perception of providing tobacco cessation services via the tobacco cessation protocol and (2) evaluate pharmacists' preparedness to implement the protocol by determining motivations and perceived barriers. Tobacco cessation is a major public health focus, as smoking is a risk factor for developing numerous disease states. West Virginia has passed legislation that will allow pharmacists to prescribe tobacco cessation treatment, which provides the opportunity for an expanded role in patient care.

Methods: This study will be conducted utilizing a pretest-posttest design with a convenience sample of pharmacists attending a continuing education session during at least one local pharmacist association meeting. The continuing education session will provide information to both pharmacists and pharmacy technicians on the benefits of tobacco cessation, approaches to addressing tobacco cessation with patients, and review the tobacco cessation protocol. Pharmacists not attending one of these meetings will be excluded from the study. The survey will gather demographic information, including gender, years in practice, type of practice setting, and practice geographic location. Questions will also assess pharmacists' perception of and preparedness to implement the tobacco cessation protocol, as well as motivations and perceived barriers to implementing a tobacco cessation program. Descriptive statistics will be utilized to analyze the results to determine how the continuing education session affects pharmacists' perception and preparedness.

Results: Research is in progress.

Conclusions/Implications: Research is in progress. We hope to show that pharmacists who may be apprehensive to implementing a tobacco cessation program via the West Virginia protocol will be more willing to do so following the continuing education session. The information obtained through this study will be utilized by the West Virginia State Board of Pharmacy when planning pharmacist requirements prior to the state-wide implementation of the tobacco cessation protocol.

441-Identifying Personality Traits Associated with Entrepreneurial and Intrapreneurial Intentions among Student Pharmacists. Shaikh N, Nili M, West Virginia University, Dwibedi N, West Virginia University School of Pharmacy, Anyanwu P, University of Houston, Kavookjian J, Auburn University, Nadpara P, Virginia Commonwealth University, Chen A, Cedarville University, Kamal K, Duquesne University, Madhavan S, University of North Texas School of Pharmacy. Email: ns0067@mix.wvu.edu.

Objective: The objective of this study was to identify the personality traits and characteristics of student pharmacists that are associated with future Entrepreneurial intention (EI) and/or Intrapreneurial intention (II). Rising cost of healthcare, increasing burden of chronic diseases, primary care provider shortages, and poor healthcare outcomes are creating new opportunities for the pharmacy profession to develop innovative patient care services that can improve healthcare outcomes and reduce costs. However, such initiatives require entrepreneurial and intrapreneurial abilities among pharmacists. Students with inherent entrepreneurial/intrapreneurial personality traits may be more likely to develop innovative practices or embrace a more patient-oriented role in the future. Determining if such personality traits in student pharmacists are associated with future entrepreneurial (preference for building one's own pharmacy related initiatives/business) or intrapreneurial intentions (preference for building pharmacy/business related initiatives in an existing organization) may help to identify and develop patient-care oriented pharmacists to succeed in a profession that increasingly needs risk takers and innovators for its future success.

Methods: A cross-sectional survey of second (P2) and third (P3) year student pharmacists was conducted in a convenience sample of six US private and public pharmacy schools. The Entrepreneurial and Intrapreneurial Pharmacist Questionnaire (EIPQ) was used to

measure the personality traits: locus of control, innovativeness, autonomy, risk-taking propensity, pro-activeness, achievement motivation, people liking, problem solving, and leadership and selected demographic variables. Four and three Likert-type item scales were developed to measure EI and II among student pharmacists, respectively. Content and face validity of the scales were assessed by expert review and construct validity assessed using exploratory factor analysis. Internal consistency of scales was assessed using Cronbach's alpha. Multiple linear regression models adjusted for sociodemographic factors were used to determine the association between personality traits and EI and II.

Results: A total of 514 surveys, including of 261 P2 and 253 P3 students were analyzed. Cronbach's alpha values for the scales ranged from 0.65 to 0.96. A majority of the sample were female (65%), between 18 and 25 years of age (85%), white (70%), single (79%), had at least Bachelor's degree (55%) and an annual family income of less than $30,000 (64.8%). The mean scores of EI and II were 3.23 and 4.22, respectively, on a scale of 1 (strongly disagree) to 7 (strongly agree). Regression models showed a significant association between EI and innovativeness, autonomy, proactiveness, being male, and having a family business background. II was positively associated with risk-taking propensity, proactiveness, problem solving and being white and negatively associated with having a family business background.

Implications/Conclusions: The study, first of its kind, indicates that student pharmacists have neutral to mild EI and II. However, EI and II were significantly associated with selected personality traits typically associated with entrepreneurs or intrapreneurs. Based on the findings, EIPQ was found to be valid and reliable, although other tests of concurrent and predictive validity need to be done. EIPQ may be useful to gain additional insights of student potential to become future innovative entrepreneurial or intrapreneurial practitioners.

442-Opioid Risk and Safety Counseling by Pharmacists for Opioid Prescriptions Dispensed-EASY, FEASIBLE, NECESSARY? Thakur T, University of Wisconsin School of Pharmacy, Chewning B, University of Wisconsin-Madison School of Pharmacy. Email: tmthakur@wisc.edu.

Objective: Pharmacists are at the frontline for educating patients about opioid risks and promoting opioid safety. While there has been a push from the national healthcare organizations for pharmacists to counsel patients on opioid safety and pain management, studies report that pharmacists are unable to deliver these services efficiently. Understanding factors that affect pharmacists' behavioral intentions based on a validated and extensively used social behavioral theory, the Theory of Planned Behavior (TPB), can help understand barriers and facilitators faced by pharmacists. To the authors' knowledge, this is the first study that uses TPB to understand pharmacists' risk and safety counseling behavior for opioid prescriptions dispensed. Drawing on TPB, this study aims to understand pharmacists' opioid counseling behavior by exploring factors addressing-1) Attitudes 2) Subjective norms, and 3) Behavioral control.

Methods: Semi-structured interviews were conducted with 16 pharmacists in Wisconsin from various settings who counseled patients on opioids. A convenience snowball sampling approach was used. Interviews lasted for 30-40 minutes, were audio recorded by the interviewer and later transcribed by a professional transcription service. Deductive coding approach was used for qualitative analysis. NVivo version 14 was used for coding. Codes were separately generated by two researchers. Categories were pre-determined based on domains of the TPB. Validity was established using member checks. Emerging themes were obtained independently by two researcher and were finalized after consensus was obtained among researchers.

Results: Interviews were conducted with 4 urban community, 4 rural community, 4 ambulatory care/ clinic outpatient, and 4 hospital inpatient pharmacists. These participants were situated in five counties and had an experience of 9±1.3 years on average. The following themes emerged for factors informing pharmacists' opioid risk and safety counseling behavior, drawing on domains of TPB: 1. Attitudes a. For behavioral beliefs, pharmacists recognized the need and responsibility on their part to counsel patients on opioid safety for new opioid medications especially for chronic conditions b. For behavioral outcomes, pharmacists were not sure if their counseling benefited the patients 2. Subjective norms a. For normative beliefs, pharmacists recognized the social stigma about opioid use. b. For motivation to comply, pharmacists were aware of the state and reported that their pharmacies had no specific laws about opioid counseling. Pharmacists had no idea what prescribers wanted them to cover in opioid consults and reported that while few patients wanted them to counsel on opioid safety; rest did not expect a consultation. 3. Perceived control a. For control beliefs, all pharmacists perceived their time and patients' lack of time as major barrier followed by patient attitudes. b. For perceived power, pharmacists expressed need for structured training, availability of written resources (e.g. handouts), clear directions about their role in patient care to feel prepared for opioid risk and safety counseling.

Implications/Conclusions: These unique findings generate a framework describing attitudinal, normative and control beliefs which inform pharmacists' intention to counsel patients about opioid risks which can be used to design practical educational interventions and policies to empower pharmacists as opioid safety educators.

443-Naloxone Dispensing in Wisconsin: Factors Affecting Pharmacists' Intentions to Offer and Dispense It. Thakur T, Kile M, Chewning B, University of Wisconsin-Madison. Email: tmthakur@wisc.edu.

Objective: Drawing on the Theory of Planned Behavior (TPB) this study aims to (1) explore pharmacist current practice for offering and dispensing naloxone and (2) understand factors affecting the dispensing of naloxone. Background The United States is currently affected by an opioid crisis. Prescription opioid misuse is a major problem. There has been a push by health organizations to dispense naloxone, an opioid overdose reversing medication, in pharmacies. Opioid overdose deaths are the leading cause of accidental deaths

in Wisconsin. In 2016, the State of Wisconsin signed a standing order, allowing participating pharmacies to dispense naloxone without a prescription. Nevertheless, data have shown no increase in naloxone dispensing.

Methods: Semi-structured 20-to 30-minute interviews were conducted with pharmacists who counsel patients on opioids until content saturation was achieved. A convenience snowball sampling approach was used to select the sample. Interviews were audio recorded and later transcribed by a professional transcription service. Qualitative analysis software NVivo 12 was used for coding purposes. Validity was established using member checks and triangulation. Two researchers separately generated high-level codes. Extensive deductive coding was used to iteratively analyze data using a thematic analysis approach following domains of TPB.

Results: A total of 16 interviews were conducted with pharmacists from a variety of settings – 4 rural community, 4 urban community, 4 ambulatory care/clinic outpatient, and 4 hospital inpatient pharmacies. These pharmacists were from five different counties and had practiced for 9±1.3 years on average. The following themes emerged drawing from three domains of the TPB: 1. Subjective norm: a. Pharmacists perceived stigma surrounding opioid and naloxone discussions. 2. Perceived Control: a. Cost was a barrier not within pharmacists' control since insurance companies do not cover naloxone. b. Lack of time, standardized screening methods, resources, and training available for naloxone communication were other reported barriers. 3. Attitude: a. Limited knowledge among pharmacists about the requirements for dispensing naloxone without a prescription based on the Wisconsin standing order. b. Pharmacists recognize their responsibility and need to educate patients about opioids.

Implications/Conclusions: Similar to other qualitative studies, convenience sampling limits generalizability of results. Further studies involving a broader sample can help overcome this limitation. This is the first study post Wisconsin's standing order that investigates pharmacists' views of their practices related to naloxone. Pharmacists report factors like lack of standardized resources and training, cost of naloxone, and social stigma that impedes their offering and dispensing of naloxone. Pharmacists recognized facilitators such as structured training and regulations for naloxone-based counseling. This study points to the need for standardized training materials, pharmacist and patient resources, such as handouts, to facilitate overdose risk and naloxone conversations.

444-Oregon Pharmacists Intention to Independently Prescribe Under HB2397. Wash A, Moczygemba L, University of Texas at Austin College of Pharmacy, Anderson L, Oregon State University, Pye T, Santiam Memorial Hospital. Email: andrew.wash@utexas.edu.

Objective: In 2017, Oregon was among the first states to pass legislation (House Bill (HB) 2397) to enable pharmacists to prescribe independently for specified medications or devices identified by a committee. In 2018, the Oregon Board of Pharmacy passed rules to guide pharmacists in prescribing via the Formulary and Protocol Compendia. It is not known how factors such as education/training, knowledge about how to create policies/procedures, or an absence of payment models impact pharmacists' intention to prescribe. Objectives included: 1) Identify factors that influence pharmacist intention to prescribe, and 2) Identify barriers to prescribing.

Methods: The Theory of Planned Behavior (TPB) was the study framework. Three focus groups, two in-person and one using web conferencing, were conducted between May and June 2019. The focus group guide was based on the TPB with questions that assessed attitudes, subjective norms, and perceived behavioral control related to independent prescribing. Past prescribing behavior and perceived obligation were also explored. All focus groups were audio-recorded and transcribed verbatim. Using the TPB as a framework, a qualitative content analysis was performed by two investigators. Consensus for names of categories that emerged for each TPB construct was reached through discussion. A codebook was created after the analysis of the first focus group. Background information of participants was collected through a questionnaire and included years practicing as a pharmacist, type of pharmacy degree, current practice site, and previous prescribing experience (either under a collaborative practice agreement (CPA) or independently with existing laws for contraception and naloxone). Awareness of the HB2397 rules was assessed by 7 items and a sum score was calculated (range 0 – 7) with higher scores indicating greater awareness. Descriptive statistics were used to report background information.

Results: Participants (n=13) reported 14.1+10.8 years of pharmacist experience. Most earned a Doctor of Pharmacy degree (84.6%) and worked in a community pharmacy setting (61.5%). The mean score on the awareness assessment was 6.3+0.9. Most participants had prior experience with prescribing (76.9%), although it was most commonly under a CPA (69.2%). Preliminary analysis of one focus group indicates that for subjective norms, the opinions of other pharmacists, providers, patients, and payers were important. Other pharmacists' low level of motivation, readiness, or interest in adding more services were cited as negative influences on intention to prescribe. For patients and providers, the importance of a trusting relationship with a pharmacist was one of the most important positive influences for pharmacist prescribing. Within the perceived behavioral control domain, issues related to billing, staffing models, pharmacist comfortability, and compliance with the Board of Pharmacy rules (including the desire for more structured guidance) were most salient. Many of these issues such as pharmacists' comfortability with prescribing or the perceived need for required training varied based on the complexity of items on the formulary or pharmacists' level of motivation, interest, or experience. Data analysis will be completed in Fall 2019.

Conclusions/Implications: Findings from this work will inform a survey of Oregon pharmacists to assess their intention to prescribe medications according to HB 2397.

445-CancelRx: Comparing Front-Line and Leadership Perceptions of Health IT Implementation Using Quantitative Ethnography. Watterson T, Xiong K, Stone J, Chui M, University of Wisconsin Madison School of Pharmacy, Ramly E, University of Wisconsin School of Medicine and Public Health. Email: twatterson@wisc.edu.

Objective: Within the last decade, a new health information technology (IT) functionality, termed CancelRx, has emerged to electronically send a medication cancellation message from the clinic's EHR to the pharmacy's dispensing software and automatically discontinue the prescription record. Medication list discrepancies between the clinics and pharmacies and makes patients vulnerable to medication errors. Implementation science principles emphasize the importance of considering front-line workers and not just leadership personnel when implementing new health IT. In this study, we used the Systems Engineering Initiative for Patient Safety (SEIPS) model and a quantitative ethnography method to compare front-line pharmacists and pharmacy leadership perceptions of CancelRx implementation.

Methods: CancelRx was implemented in October 2017 at an academic health system. At nine-months-post implementation, our research team interviewed a convenience sample of pharmacists (N = 6) and pharmacy administrators (N = 3). The participants were asked questions regarding the prescription dispensing and medication cancellation processes. Rather than analyzing the interviews in a traditional qualitative manner, we used a novel approach to quantify the text using a mathematical model. Front-line pharmacist and pharmacy leadership perceptions were compared using Epistemic Network Analysis (ENA). ENA is a quantitative ethnography technique to model the structure of connections within data. This technique provides insight into how individuals makes sense of the of the world around them by describing the linkages found within discourse. ENA provides a systematic way to compare networks and understand how connections differ between people. First, codes were created to encompass the components of the SEIPS work system model: person, tasks, tools and technology, organization, and physical environment. Next, each sentence of the interview transcripts was coded using an automated coding software (ncodeR, 2018). We graphically modeled pharmacist and pharmacy administrators' connections between cancellation messages (CancelRx) and work system components using ENA.

Results: The qualitative data and ENA illustrated different connections amongst SEIPS components between pharmacists and pharmacy administrators. Dispensing pharmacists viewed CancelRx as just one communication tool in the scope of a larger medication discontinuation process. These participants perceived that the process of cancelling a medication required consolidating information from the providers, prescriptions, and the electronic health record. The pharmacist considers all of these components and attempts to make sure that they are all aligned. Pharmacy administrators, removed from the day-to-day workflow of dispensing pharmacies, presented a rather narrow depiction of the medication discontinuation process and viewed CancelRx in an isolated way without recognizing interactions of CancelRx and work system components.

Conclusions/Implications: These results highlighted the importance of assessing implementation of new innovations in terms of an individual's role within an organization. ENA allowed us to go beyond assessing just how pharmacists and pharmacy administrators view a novel Health IT innovation—but also how they viewed and framed the problem CancelRx was intended to solve. Ultimately, the findings emphasize end-user consideration when implementing a health IT functionality or any new innovation.

446-Kentucky Pharmacists' Perceptions of Deprescribing. Westling M, Freeman T, Moga D, University of Kentucky College of Pharmacy, Harrington N, University of Kentucky Department of Communication, College of Communication and Information, Huffmyer M, UK Healthcare, Keck J, University of Kentucky College of Medicine. Email: mwe243@uky.edu.

Objective: The objectives of this study are to 1) assess pharmacists' attitudes towards deprescribing and 2) identify pharmacists' perceptions of deprescribing facilitators and barriers. The important issue of polypharmacy carries risks for negative health outcomes, including adverse drug reactions, falls, hospitalization, and mortality. Currently, interventions focusing on the deprescribing of inappropriate and/or unnecessary medications usually involve prescribers and pharmacists alike, yet polypharmacy remains a common problem. In order to design effective solutions for polypharmacy, a better understanding of attitudes about deprescribing as well as perceived facilitators and barriers effecting deprescribing behaviors is needed. Additionally, as organizations emphasize the need for patient-centered outcomes and goals in deprescribing, more information about how pharmacists perceive their role in deprescribing will be especially useful to researchers hoping to create interprofessional solutions for polypharmacy.

Methods: A convenience sample of Kentucky community pharmacists will be recruited via Advancing Pharmacy Practice in Kentucky Coalition (APPKC) listserv to participate in a survey. The email will contain a link to an electronic survey administered via REDCap that will anonymously capture survey responses. The first 100 respondents of the survey will be compensated for their time given a goal sample size of 100 pharmacists. Survey questions assessing pharmacists' attitudes toward deprescribing were adapted from a previously published survey conducted within a federal healthcare system. Additionally, survey questions have been developed to collect pharmacist perceptions of deprescribing facilitators and barriers and to capture standard demographic information, including practice setting. Response binary survey data will be summarized as frequencies (percentages) with the total number of respondents as the unit of analysis. Survey response analysis will be stratified by practice setting whenever possible. Continuous survey data will be summarized using means (standard deviation) or medians (interquartile range). Regression models examining response differences for items of interest will be fit using respondent characteristics as control variables.

Results: Research in progress.

Implications/Conclusions: Research in progress.

447-Pharmacy Personnel's Perceived Barriers to Pharmacist-Prescribing Tobacco Cessation Services in the Community Pharmacy Setting. Xiong S, Willis R, Farinha T, Albertsons Companies -Denver Division, Hamper J, Burkitt C, Albertsons Companies, Lalama J, Regis University. Email: suriya.xiong@albertsons.com.

Objective: The primary objective of this study is to evaluate the perceived barriers pharmacy personnel have to pharmacist-prescribing tobacco cessation services in the community pharmacy setting. Increasing patient accessibility to tobacco cessation products is essential with tobacco use being a leading cause of preventable mortality and morbidity. Currently, 34.3 million adults in the United States (14.0% of the population) use tobacco regularly. Seven out of 10 smokers want to quit, but only 7% of smokers are successful. Community pharmacists are in an advantageous position to help smokers quit with their increased accessibility for patients, specialized knowledge of pharmacotherapies, and experience with patient counseling. Extensive studies have shown that pharmacist-delivered tobacco cessation services are effective. As the scope of practice for community pharmacists continue to expand, pharmacists are permitted to prescribe tobacco cessation products in 12 states with varying training requirements and prescriptive limitations. To date, no published data on perceived barriers from community pharmacy personnel in delivering these services has been collected and analyzed.

Methods: This study will be a descriptive cross-sectional survey of community pharmacy personnel (including pharmacists, interns, technicians, and clerks) from Albertsons Companies community pharmacies in states with legislation allowing pharmacists to prescribe tobacco cessation products. These states are Arizona, Arkansas, California, Colorado, Idaho, Indiana, Iowa and New Mexico. The survey will be created using an online survey tool with targeted questions for pharmacists, interns, technicians and clerks. Pharmacy personnel will be asked about their demographics, practice characteristics, perceived barriers, beliefs and attitudes towards pharmacist-prescribing tobacco cessation services. Pharmacy personnel will also be asked about additional resources and training they need to improve and/or implement this service. No identifiable personal information will be asked. The study will be submitted for IRB approval from Regis University. The survey will be posted on the company's internal bulletin for pharmacy personnel to access. Completing the survey will be voluntary. In order to increase response rate, the survey will be promoted through the pharmacy weekly newsletter. The goal is to reach at least 20% response rate. The survey will be posted for one month from November 1st, 2019 – November 30th, 2019. Data collected will be evaluated for common perceptions and themes by the primary investigator. Descriptive statistics will be used for data analysis.

Results: Research in progress.

Implications/Conclusions: Research in progress. Findings from this study will help identify additional training needed and deficiencies in community pharmacy practice to reduce barriers to providing pharmacist-prescribing tobacco cessation services in the community setting.

Pharmacoeconomics and Outcomes

448-Warfarin Therapy Adherence and Health-Related Quality of Life Among Warfarin Patients in Saudi Arabia. Alsaikhan F, Prince Sattam Bin Abdulaziz University. Email: fsaikhan@hotmail.com.

Objective: Treatment satisfaction and medication adherence to oral anticoagulant therapy are important measures that often decrease morbidity and mortality. Though warfarin is a frequently prescribed oral anticoagulant but warfarin therapy adherence and its impact on overall Health-Related Quality of Life (HRQoL) has not been studied in Saudi Arabia. Objectives: To assess the association between warfarin therapy adherence and HRQoL among patients on warfarin in Saudi Arabia.

Methods: A prospective, cross-sectional, descriptive study was conducted on 387 warfarin patients attending an outpatient anticoagulation clinic of Prince Sattam Bin Abdulaziz University Hospital in Alkharj, Saudi Arabia. Warfarin therapy adherence was assessed using MMAS-8 whereas HRQoL was measured using WHOQOL-BREF. Descriptive and inferential statistics were used to examine patients' demographic characteristics and to determine the association among different variables. Spearman's correlation coefficient was used to determine the association between various study variables.

Results and Conclusion: Total 387 participants were more females than males (n=257, 66.4% and n=130, 33.6% respectively). Mean adherence score for the study population was 5.86±1.21. Mean HRQoL score for physical health domain, psychological domain, social relationships domain, and environment domain were 62.11±15.53, 68.20±16.11, 64.46±26.19 and 63.43±17.60 respectively. The correlation coefficient for all four domains of WHOQOL-BREF vs total mean score of warfarin therapy knowledge were 0.124, 0.051, 0.063 and 0.083 respectively indicating a week positive association between warfarin therapy adherence and physical health domain ($p < 0.005$). Study results indicate a positive association between warfarin therapy adherence and physical health domain of WHOQOL-BREF among warfarin patients. In other words, better warfarin therapy adherence can improve the physical health of warfarin patients.

449-Impact of Medication Therapy Management (MTM) Completion Rates Within Mirixa on Direct and Indirect Remuneration (DIR) Fees Within a Community Pharmacy Chain. Highlander H, Bennett J, Becker A, Massey D, Fruth Pharmacy. Email: hhighlander@fruthpharmacy.com.

Objective: The purpose of this study is to assess whether increased completion rates of patient cases within Mirixa results in a statistically significant reduction in pharmacy direct and indirect remuneration (DIR) fees. The Centers for Medicare and Medicaid Services (CMS) contract with Pharmacy Benefit Managers (PBMs) in order to facilitate Medicare Part D plans to CMS beneficiaries. In 2003, the Medicare Modernization Act was passed, which allowed PBM's to charge pharmacies DIR fees. The initial intent of DIR fees was to decrease medication costs and improve the quality of care for Medicare Part D beneficiaries. PBMs are responsible for

contracting with pharmacies to facilitate Medicare Part D plans for beneficiaries and monitor pharmacy performance-based quality metric goals focused on improving the quality of patient care. Some of these performance-based quality metrics include medication adherence, comprehensive medication reviews (CMR) completion rates, and PBMs formulary compliance, which all fall under the broad umbrella of medication therapy management (MTM) services. MTM programs such as Mirixa are used by pharmacies across the country to aid in meeting performance based-goals and minimize retroactive DIR fees applied by PBMs. Recently there has been controversy surrounding DIR fees due to the lack of transparency and ambiguity in which they are applied. Pharmacies are billed DIR fees months after the date of transaction without clarification of failed criteria or rationale for fee amounts. Due to the abstruseness regarding DIR fees, the economic value to pharmacies of completing MTM services through programs such as Mirixa has been called into question.

Methods: IRB approval for this study is currently pending. This study is a retrospective cohort analysis conducted across 31 pharmacies within the states of Ohio, West Virginia, and Kentucky. Data for each pharmacy will be collected in aggregate by retrospective chart review from the MTM program Mirixa and broken down into assigned cases, served cases, declined cases, and lost cases during the time frame of January 1st 2018 through December 31st 2018. This information will be further broken down into programs within Mirixa pertaining to CVS Caremark, Silverscript, and Aetna. Data will then be collected regarding DIR fees charged for the same corresponding prescription plans referenced in the Mirixa data during the same time frame for each pharmacy. Demographic information collected from each pharmacy will include annual prescription volume, geographic location, and number of employees performing MTM services within each pharmacy. Data collected from this study will be analyzed by a regression analysis.

Results: In progress, anticipated completion by March 2020.

Implications: The data collected from this research will be used to assess whether increased completion rates of cases within Mirixa correlates to a reduction in DIR fees charged to pharmacies per claim. This information can be used to guide pharmacies in determining how much of their resources should be implemented towards MTM services in order to minimize DIR fees.

451-Analysis of Drug Indications Proposed by Sponsor Companies, Recommended and Approved by the FDA. Patel D, Chapman University, Seoane-Vazquez E, Chapman University School of Pharmacy, Rodriguez-Monguio R, University of California San Francisco School of Pharmacy. Email: patel188@mail.chapman.edu.

Objective: The objective of this study was to assess differences among the drug indications proposed by the sponsor company in New Drug Applications (NDA) and Biologic License Applications (BLA) submitted to the FDA, recommended by FDA reviewers and approved by the FDA for novel active ingredients approved by the FDA Center for Drug Evaluation and Research(CDER) in 2017 and 2018. The indication of a drug in development is typically reassessed in response to the information derived from pre-clinical and clinical studies. Sponsors NDA and BLA must submit a proposed indication(s) based on the evidence contained in the application dossier. The indication includes the use (treatment, prevention or diagnosis of disease), major limitations of use, the use of adjunct therapy and restrictions of use for a specific patient population. The indication is supported by the available clinical evidence and, in theory, should concur with the indication recommended by the FDA reviewers and approved by the FDA.

Methods: Data for this study included initial NDAs and BLAs for the novel active ingredients approved by the FDA in the years 2017 and 2018. Regulatory data including type of application submission (NDA or BLA), approval date, active ingredient, FDA review classification (priority review or standard review), and therapeutic class were derived from the FDA database Drugs@FDA. The indication(s) recommended and approved by the FDA and the indication(s) proposed by the sponsor company data were extracted from the "Approval History, Letters, Reviews, and Related Documents" section of the database Drugs@FDA. The indication approved by the FDA was collected from the first FDA approved label for each drug. The data reliability was assessed by two study investigators to assess differences in indications. Discrepancies were resolved by a third investigator.

Results: The FDA approved a total of 105 new drugs and biologics in 2017 and 2018. Information about the proposed indication was fully redacted in 8 (7.6%) drugs and partially redacted in 5 (4.8%). Differences in indication(s) proposed by the sponsor company and approved by the FDA occurred in 41 (39.0%) drugs. The most common differences between proposed and approved indications were age (n=23, 21.9%) and restrictions or limitations of use (n=23, 21.9%). Therapeutic classes with 5 or more approved indications included antineoplastic agents (27 approvals and 48.1% differences between proposed and approved indications), antivirals for systemic use (8; 50.0%), other nervous system drugs (7; 14.3%), antibacterials for systemic use (7; 42.9%), and other alimentary tract and metabolism products (5; 6.0%). There were 16 (15.2%) drugs that had differences between the FDA recommended and approved indications.

Conclusions: This study found differences between the drug indication(s) proposed by sponsor companies, recommended by FDA reviewers and approved by the FDA for new drugs and biologics. Most of the differences were related to patients' age and restrictions and limitations of use. More studies are needed to evaluate the potential effects of observed differences on the assessment of the place in therapy of new drugs.

452-Impact of Pharmacy Interns on a Community Pharmacy Immunization Program. Peace M, Ahmed-Sarwar N, Wegmans School of Pharmacy, Sutton Burke E, Wegmans School of Pharmacy/Wegmans Pharmacy. Email: mrp03860@sjfc.edu.

Objective: Pharmacists in the community setting have the unique advantage in providing increased access and convenience for

patients seeking immunizations. In New York State pharmacists have been providing immunization services since 2008, and influenza vaccines are the most commonly administered vaccines. Immunization services have resulted in an increase in revenue and profit margins for community pharmacies during influenza season. In 2019, a legislative change occurred allowing pharmacy interns to immunize under the supervision of a pharmacist. Community pharmacy retailers can utilize the projected increase in revenue to support the education and training of student pharmacists, in addition to the revenue serving as a financial incentive to alter current policies and procedures. Studies have demonstrated the impact of pharmacists on the volume of immunizations administered, but there is minimal data available on the financial impacts of pharmacy interns as immunizers. The objectives of this study are to implement a procedure to integrate pharmacy interns into the pharmacist delivered immunization workflow and to determine the impact the increase in revenue from the legislative change on a regional community pharmacy chain.

Methods: This study is a retrospective profitability analysis. Data collection will include vaccine administration volume between August 1 2018 and May 31 2019 and will be utilized to formulate volume projections for the 2019-2020 influenza vaccination season. In addition, financial data associated with vaccine administration, including but not limited to the cost of vaccination, insurance reimbursement rates, and pharmacist and pharmacy intern payroll information will be collected. This data will be utilized to project the potential financial impact pharmacy intern immunizers can have on revenue production. Additionally, the aggregate data will be analyzed to develop a comprehensive workflow protocol and will be extrapolated to prospectively determine its potential impact based on goals and projections created by the study site. This analysis can be used to develop and support additional policy changes at a state level involving the role of pharmacist and pharmacy interns as immunizers.

Preliminary/Final Results: Data collection and analysis is in progress.

Implications/Conclusions: We expect to find a correlation between the implementation of pharmacy interns as immunizers and revenue generation of the immunization program likely secondary to the reduction of overall labor cost. An increase in the volume of immunizations administered is not projected for the 2019-2020 influenza season, but the potential may exist if pharmacy interns are integrated into the immunization workflow, resulting in an increase in revenue generation.

453-The First Line Treatment of Chronic Myelogenous Leukemia with Tyrosine Kinase Inhibitors: Population-based Uptake and Costs. Rivera D, Enewold L, Mariotto A, National Cancer Institute, Barrett M, IMS, Banegas M, KPCHR. Email: donna.rivera@nih.gov.

Objective: Chronic myelogenous leukemia (CML) is a hematological malignancy that represents an estimated 15% of leukemia diagnoses in the United States (US) and has a median age at diagnosis of 64 years. Following the 2001 approval of the breakthrough therapy, imatinib, which inhibits the Ph+ CML characteristic BCR-ABL tyrosine kinase, survival significantly improved. Subsequently, additional more expensive tyrosine kinase inhibitors (TKIs) with varying selectivity profiles have been approved. Population-based studies outside of randomized controlled trials are needed to evaluate the real-world uptake and economic impact of TKI therapy. Objective: To evaluate factors associated with the uptake and costs of first-line TKIs among elderly CML patients in the US.

Methods: CML patients age 65+ years at diagnosis between 2007 and 2015 were identified from population-based cancer registries in the linked Surveillance, Epidemiology, and End Results (SEER) -Medicare database. The percentage of CML patients receiving imatinib, dasatinib, or nilotinib within the first year of diagnosis was calculated along with time to first line treatment initiation. Bivariate comparisons and Cox proportional hazards models were used to identify patient demographic and clinical characteristics associated with TKI utilization. Total monthly costs (mean, median, IQR) by year for patient responsibly (out of pocket costs) stratified by Part D low-income subsidy (LIS) status, and Medicare payments were also calculated.

Results: During the study period, 69.4% of the 1,589 eligible CML patients received a TKI. Utilization of TKIs increased from 59.3% in 2007 to 75.8% in 2015. Although imatinib remained the most commonly used TKI during the study period, dasatinib and nilotinib use increased. Almost 60% of patients received treatment within 3 months of diagnosis. Multivariate analysis indicated that TKI use was less likely among the very elderly [age >75 vs. 65-69: hazard ratio (HR)=0. 72; 95% confidence interval (CI)=0.63-0.83] and patients without LIS (HR=0.75; 95% CI=0.65-0.87) as well as patients with a higher Hierarchical condition category risk scores (>2 vs. 0: HR=0.74, 95% CI= 0.62-0.88). The average monthly Medicare payment for each TKI increased over the study period: imatinib (range: $2890-$9209), dasatinib (range: $6106-$8904), and nilotinib (range: $7477-9368). For out of pockets costs, the average monthly patient responsibility was significantly lower for LIS eligible patients: imatinib (2016: $12 vs. $487), dastainib (2016: $34 vs $557), and nilotinib (2016:$1 vs. $526).

Implications/Conclusion: TKI use has increased significantly since 2007. While imatinib remained the most frequently prescribed first line agent, by 2015 newer TKIs represented a third of the market share. Utilization patterns indicated possible age, comorbidity, and financial barriers (LIS), despite known benefits of early treatment including improved drug response and survival. TKI use is indicated for long term CML therapy and increased adoption of newer, more expensive agents raises concerns about the sustained affordability of CML treatment, especially among unsubsidized patients. * See supplementary figures provided in the attachments.

454-Projecting the Potential Public Health Benefits Associated with Community Pharmacists' Involvement in Smoking Cessation. Vadagam P, Ferrufino C, Kowal S, IQVIA, Fisher M, GSK Consumer Healthcare. Email: pratyusha.vadagam@iqvia.com.

Objective: This evaluation estimates the potential impact associated with enhanced efforts by pharmacy staff to identify tobacco users and recommend pharmacotherapy options, including prescription and over-the-counter (OTC) treatments. With approximately

14% of US adults reporting smoking every day or most days, smoking and smoking-related diseases impose a significant economic and public health burden in the United States (US). While pharmacists and technicians routinely engage with patients for a wide variety of health conditions, smoking status is not uniformly captured at the point of care. A recent CDC study suggests that about only 10% of US adults have ever been asked about their smoking status by a pharmacist. Unaided smoking cessation (SC) rates are typically low (< 5%). Brief advice from health professionals has been shown to improve SC outcomes.

Methods: An existing Markov-based SC model (Benefits of Smoking Cessation on Outcomes-BENESCO) model was applied. The model was updated with key epidemiology and cost input parameters to reflect current 2018 estimates. Published data were used to estimate the likelihood of quitting for up to two quit attempts per smoker across available SC methods. Each patient's risk for key smoking-related comorbidities and mortality over time was adjusted based on age and smoking status. Published data were also used to estimate the number of smokers making quit attempts and using prescription or OTC aids for SC. The model assumes that a smoker will attempt to quit up to 2 times. For relapse, medium-and long-term recidivism rates are based on the published literature. These data are used to estimate population-level clinical outcomes among those attempting to quit and explores how greater involvement from pharmacists impacts outcomes. The base case analysis assumes 1 outreach per day annually from 60,000 pharmacies nationally, with a 20% recruitment rate. Scenario analysis were also conducted to estimate the impact of improved adherence for NRT therapies.

Results: Of the 39.31M smokers in the US, an estimated 21.8M will attempt to quit, and 5,557,884 will use a SC aid in the first year of the model. Pharmacists have the potential to encourage 4,380,000 additional smokers per year to attempt to quit using a SC aid. In the first 2 years, an additional 969,160 smokers could have successful quit attempts, at an average cost of $8439 per quitter. Assuming 1 outreach per day, pharmacist intervention could increase the number of quitters by 138,451 by year 2. Use of SC aids results in a short-term cost implication with a treatment cost of $6,589M in year 2, which is offset by a decrease in estimated health care expenditures ($135M in year 2, $714M by year 5). Scenario analysis demonstrated that a 10% increase in NRT efficacy rates, could increase successful quitters by up to 32%.

Implications/Conclusions: Focusing on opportunities that lead to greater attention and engagement by pharmacy staff to patients who smoke could yield substantial public health and economic benefits. Community pharmacy management and continuing education efforts should make SC a priority area.

455-Possible Association between Metabolic Syndromes and Alzheimer's disease and Related Dementia (ADRD): A Cross-Sectional Pilot Study. Wang X, University of South Carolina, Li S, University of Tennessee College of Pharmacy, Lu K, University of South Carolina College of Pharmacy. Email: xiaoxiaw@email.sc.edu.

Objective: To date, there is no research demonstrated whether metabolic syndromes (MetS) could increase the risk of Alzheimer's disease and related dementia (ADRD), and which factors might play a key role between these two-disease statuses in the Medicare population. Numerous evidence showed that females might have a higher risk of alzheimer's disease than male patients in the aging population, but there is no clinical data from the medicare population to support this suspension. The goal of this study is to determine the relationship between MetS and ADRD and investigate whether possible gender disparities exist.

Methods: Medicare population's medical information was collected from the Medicare Current Beneficiary Survey (MCBS) data, and MetS were measured based on ICD-10 codes from Medicare claims. ADRD was measured based on relevant icd-10-cm codes from chronic conditions data warehouse. Based on nih definition, mets include hypertension, diabetes/prediabetes, hyperlipidemia, and obesity. Individuals with more than three of the above diseases were considered as having mets. Univariate and bivariate analyses were conducted to determine the data distribution and potential confounding factors. Multivariable logistic regressions were conducted to determine the effect of mets on the risk of ADRD, with weighted associations for nationally representative data.

Final Results: In the study population, 12.07% of individuals had obesity, 33.86% OF individuals had diabetes/prediABETES, 62.07% of individuals had hypertension, and 52.46% OF individuals had hyperlipidemia. Based on nih definition, 27.29% of individuals in this study had MetS. IN addition, 8.06% of individuals were diagnosed with ADRD. Individuals with MetS had A significantly higher ratio of ADRD (9.01% vs 2.85%, p<0.0001). After controlling for covariates, there WAS a strong association between individualS suffering from MetS and the risk of ADRD (OR: 2.36, 95% CI: 1.66-3.35). FOR GENDER, compared to females with MetS, males had A significantly lower percentage of ADRD (7.12% vs 10.58%, p=0.0044). After controlling for covariates, males suffering from MetS were less likely to be associated witH ADRD (OR: 0.67, 95% CI: 0.46-0.97) compared to females.

Conclusion: Our results indicate that people with MetS may have higher likelihood to develop ADRD in the Medicare population, and MetS could be a potential biomarker to predict the risk of ADRD in elder Medicare group. Elder patients and caregivers should monitor and manage their metabolic syndromes to prevent the onset of ADRD. Practitioners should consider earlier screening and watching for symptoms of dementia in elder patients those with MetS characteristics Moreover, healthcare professionals should pay more attention for female patients in Medicare group because they have higher risk for ADRD.

456-Pharmacoeconomics and Medication Management of TB Regimen 3HP in a Public Health Setting. White M, Lawton B, Ramdeen L, Mohamed O, Onwubiko U, Eke A, Holland D, Godfrey L, Fulton County Board of Health. Email: michele.white@fultoncountyga.gov.

Objective: The Centers for Disease Control and Prevention (CDC) first recommended Isoniazid/Rifapentine (3HP) for the treatment of Latent Tuberculosis Infection (LTBI) in 2011. Additional research has since been conducted to evaluate efficacy, safety, and treatment

completion rates (CR) for 3HP. In 2011, the overall completion rate for Fulton County Board of Health (FCBOH) clients receiving LTBI treatment was 65%. The CR increased to 79% in 2012 after the implementation of 3HP. Starting 2015, FCBOH's Respiratory Health (RH) extended 3HP therapy to LTBI clients residing in Atlanta's metropolitan shelters and to the homeless via Directly Observed Therapy (DOT). As a result of transient living arrangements and lifestyles, CR for clients receiving the 3-month regimen declined. FCBOH Pharmacy in collaboration with RH and Epidemiology monitored clients receiving 3HP therapy via DOT from start to completion. Because of an increase in the number of clients not completing the dispensed 3-month therapy, changes were implemented in 2018. Instead of dispensing the entire 3-month prescription, only a one-month supply with four subsequent refills was provided.

Methods: FCBOH conducted a retrospective review of all DOT Clients receiving 3HP orders from 2015 to present. Clients treated with 3HP had a positive QuantiFERON Gold interferon-gamma release assay (QFT) or Tuberculin Skin Test (TST) result. Clients received weekly medications by DOT with clinical assessment and monthly laboratory monitoring. Reasons for incompletion and discontinuation of 3HP therapy were reviewed. The following parameters were reviewed: number of clients initiated to receive 3HP; number of clients completing 3HP; and the number of clients not completing 3HP.

Preliminary Results: From 2015 through June 2019, 405 clients started on 3HP therapy. Of the 405, three hundred and one (74.3%) clients completed the regimen. Whereas, 104 clients (25.68%) of the 405 clients did not complete the regimen. Incompletion rates (IR) increased from 13.16% to 34.09%. Major reasons for IR were lost to follow-up (48.08%) and uncooperative clients (26.92%). Twenty-five percent were due to other reasons. Prior to 4th quarter of 2018, CR for the shelter/homeless population declined. Due to the decline in CR with this population, FCBOH pharmacy instituted changes to minimize drug costs and wastage.

Conclusions/Implications: Health Economics and Outreach (HEOR) studies are designed primarily to support the value proposition for a healthcare intervention and to answer two important questions: 1.) What is the impact of the intervention on health outcomes; 2) what are the economic consequences of implementing the intervention. Collaborative impact of FCBOH Pharmacy services with RH have at least mitigated wastage by allocating monthly 3HP with additional refills to all clients receiving 3HP versus providing the entire 3HP (3 months) regimen. This course of action allows fiscal accountability and responsibility to ensure more clients receive adequate healthcare and prevention of Tuberculosis (TB).

457-Economic Impact of Pharmacist Interventions in Pediatric Ambulatory Care Clinics. Yung E, Wise K, McNicol M, Sebastian S, Lewis D, Fischer J, Petkus K, Schmuhl K, Nationwide Children's Hospital, Tan J, The Ohio State University. Email: elaine.yung@nationwidechildrens.org.

Objective: Ambulatory care pharmacists have a unique opportunity to identify and prevent adverse drug events (ADEs) at the time of initial prescribing and throughout the treatment course. These interventions can reduce unexpected clinic visits or hospitalizations which decrease overall healthcare costs. Studies have demonstrated that pharmacist interventions impacting adult patients have been associated with substantial economic benefit and prevention of serious ADEs. Similar research has not been conducted in the pediatric patient population. This study will explore the economic impact of pharmacist interventions related to ADEs in pediatric ambulatory care clinics. Objectives: Primary: To determine the cost avoidance of pharmacist interventions associated with the prevention or management of ADEs in pediatric ambulatory care clinics. Secondary: To describe and quantify pharmacist interventions related to the prevention and management of ADEs in pediatric ambulatory care clinics.

Methods: Pharmacist interventions from pediatric ambulatory care clinics will be collected within an electronic health record during a four month period. These documented interventions will be categorized into one of five categories: drug interaction, drug not indicated, prevent or manage ADEs, prevent or manage drug allergy, or non-applicable. A review board consisting of a minimum of five pediatric ambulatory care pharmacists will review the documented interventions. The review board will then determine the severity of the ADE that would have likely occurred had the pharmacist not intervened. The expected probability of the event will be classified according to the Nesbit Method (0-0.6) and the level of care necessary to treat the suspected ADE will be determined. Potential levels of care include: hospitalization, ambulatory care, and self-care. The cost avoidance associated with each prevented ADE will be calculated by multiplying the probability of the ADE occurring to the average charge of the expected level of care.

Results: It is expected that pharmacist interventions in pediatric ambulatory care clinics will prevent or manage ADEs and decrease the associated healthcare costs.

Conclusion: This data can be used to expand the role and utilization of pharmacists in pediatric ambulatory care clinics and to reduce ADEs.

Professional Development

458-Impact of a Third Year Elective Course Focusing on Post-Graduation Preparation. Coleman M, Wilson J, Wingate University School of Pharmacy, Dolder C, VA Northern California Healthcare System. Email: m.coleman@wingate.edu.

Objective: The primary objective was to examine the perceived usefulness of a third year elective course focusing on post-graduation preparation. A secondary objective was to determine the match rate of students within the elective versus other students in the school not enrolled in the elective. There have been previous studies describing various elective courses pertaining to post-graduate training preparation. However, there is limited information about retrospective student perceptions of the usefulness of such an

elective at the point of graduation and career launch, as well as the impact of such courses in terms of match results.

Methods: Pharmacy students enrolled in the elective during their third professional year were asked to participate in a survey at the conclusion of their fourth professional year. The survey was used to evaluate students' retrospective perceived usefulness of course-related content and activities in preparation for their post-graduation plans. Program match results for all graduating students, available from aggregate school data, were examined to compare match results for students previously enrolled in the elective to those who were not. A total of four years of data was analyzed. Descriptive statistics were used to describe demographics and summarize survey responses. Pearson's Chi-Square test was used to compare match rates.

Results: Fifty-six of 75 eligible students responded to the survey over the four years of data collection (response rate 75%). Five incomplete responses were excluded from data analysis (usable response rate 68%). In the survey, 51% (n=26) of students indicated they applied to at least one residency program. Fifty-three percent (n=27) applied to at least one place of employment (in addition to or in place of residency). Of the activities and content in the elective, the curriculum vitae (CV) workshop; interviewing tips; composing letters of intent, cover letters, and thank you cards; and mock interviews were ranked as most useful. A large majority of respondents (94%) found the elective to be helpful in navigating the post-graduation training process. Twenty-one of the 27 students (77.8%) pursuing other employment found the elective to be helpful in navigating the employment process. For the secondary objective, the students previously enrolled in the elective had a 60.7% match rate with a residency program, compared to the 64.7% match rate for those students who were not enrolled in the elective (p=0.70).

Conclusions/Implications: The elective course was perceived as helpful in post-graduation preparation by almost all of the respondents, regardless of pursing residency or employment. While there was not a statistically significant difference in the match rates between those who were enrolled in the elective and those who were not, the difference in match rate may be attributed to the possibility that students who were already planning to pursue residency opted for more clinical elective experiences. The elective provides students with information regarding post-graduation options and tips which may help with navigating the process.

459-Exploring the Use and Opinions of Digital Communication in Student Pharmacists. Iverson P, Cayanan A, Godsey M, Stewart A, Robinson J, Washington State University College of Pharmacy and Pharmaceutical Sciences. Email: pari.iverson@wsu.edu.

Objective: The objective of this study is to evaluate the use of and opinions on digital versus in-person communications in student pharmacists and the impact that both forms of information delivery have on an individual's approach to leadership. Background: Digital communication is any form of communication that is written i.e. emails, text messaging, social media (direct messaging, Facebook Messenger, Snapchat, etc.). In-person communication includes face-to-face conversations, video chats, and phone calls. This study is focused on the differences in technical aspects of communication such as wording, phrasing, and tone when delivered digitally versus in-person. Additionally, emotional aspects of communication will be explored as well. These aspects include anxiety related to each type of communication, fear of miscommunication, or being perceived as unprofessional.

Methods: All enrolled (N=84) students will be asked to take a voluntary survey measuring their perceptions of the effectiveness of digital versus in-person communication when it applies to a professional setting. The survey will be administered prior to the tenth week of the fall semester as a pre-survey control, as well as during the eleventh week of the fall semester as a post-survey following the lecture: "Leadership in the Digital Era".

Results: This research is still to be completed. The pre-survey will be administered on October 22nd on the tenth week of the fall semester. The "Leadership in the Digital Era" lecture and post-survey will be delivered and administered on October 29th during the eleventh week of the fall semester. All data analysis will take place as soon as possible after these dates.

Conclusions: This study will help the academy develop a better understanding of the different forms of communication that student pharmacists will utilize in their careers as leaders and well-rounded healthcare providers.

460-Professional Development of Clinical Pharmacy Practice Competencies from Preceptor Led Global Medical Mission Trip Experiences. Lee R, University of Washington. Email: richwLee@uw.edu.

Objective: The primary objective of this study was to review the application on professional development of clinical pharmacy practice competencies from preceptor led medical mission trips through experiential learning programs focused on care delivery in global health practice settings through a descriptive report of the planning process of medical mission trips focused on pharmacy care.

Methods: Doctor of Pharmacy students from the University of Washington have developed a model for executing medical mission trips for underserved communities working alongside Pharmacist Preceptors, Physicians, Dentists, Optometrists, Nurses, and Community Health Care Workers with a focus on clinical practice development and education. A study approved by the University of Washington Institutional Review Board authorized a series of survey to analyze the impact of mission trip planning and execution through a voluntary pre-departure survey and post-departure survey focusing on student expectations, outcomes and reflections in coordination with a structured weekly seminar class to prepare for a planned mission trip. Quantitative statistical analysis was conducted using a two-tailed independent t test to compare responses obtained before and after the mission trip alongside the use of qualitative analyses using descriptive statistics collected from surveys and testimonials. Questionnaires linked with pharmacy practice and clinical focuses were paired with self reported educational assessments to measure if working collaboratively in the field of pharmacy though this project based experience improved self reported educational outcomes.

Results: Data collected since the inception of the current pharmacy student organized medical mission program was analyzed through comparisons of pre-departure and post-departure surveys. Students from all class standings were represented in the study ranging from Pre-Pharmacy, PY1, PY2, PY3, PY4 and Pharmacy Residents. Educational mission trips were planned using interdisciplinary health team members including professionals and students in the field of nursing, physical therapy and public health. Students were trained in a wide range of competencies including blood pressure screening, blood glucose screening, cholesterol screening, documentation of SOAP notes and were exposed to unique practices such as the assessment of epilepsy as led by a preceptor specialized in epilepsy research. Students reported improvements in screening techniques ($P < 0.05$), improvement in patient consultation abilities ($P < 0.05$), improvement in ability to work in teams ($P < 0.05$) and improving their cross cultural competencies ($P < 0.05$). Students also engaged in research design, analysis and comparison of different practice guidelines set by the WHO and local Ministry of Health.

Conclusion: The team based approach of planning a collaborative medical mission trip as a hybrid in-classroom and out-of-classroom experiential learning program can provide unique experiences for students to better understand other health professions and work with diverse patient and team member populations. Students found value in this experiential program both on the planning side and through participants working in the clinic. There is room for further growth through expanded interdisciplinary care models involving students across other health disciplines. The skills earned from this experience can help improve cross cultural competencies for students practicing care in the US and the wide range of populations that we served.

461-Pharmacy-Practice Research: Opinions and Perspectives from Researchers to a Pharmacy R&D Unit. Lourenco L, Reis L, Lopes M, Farmacia Central -Cacem. Email: luis.lourenco@farmaciacentralcacem.com.

Objective: To collect the opinions and perspectives of health and non-healthcare researchers concerning the participation of community pharmacies in research studies and the creation of a community pharmacy Research and Development (R&D) unit.

Method: Exploratory study based on a survey sent to worldwide researchers from different scientific fields. Data was collected during April and May 2018. A convenience sample was used. The questionnaire was made available online (Google Forms) and its access link was sent by email to 982 researchers. Statistical analysis was performed with SPSS version 23.

Results: Opinions and perspectives of 45 researchers were received, 23 (51.1%) of which were Portuguese and 22 (48.9%) were from other countries. Most of the responses came from healthcare researchers (64.4%) and, amongst those, 89.6% were pharmacists.. Most researchers showed agreement to the statements related to the proposed “attitudes towards research” and “barriers to research participation”. The degree of agreement was not so marked on the “recognition of the purpose of research” (31.1% “some disagreement”), the fact that the “pharmacist does not have time to research” (40% “some disagreement”) and the “lack of skills to investigate” (26.7% “some disagreement”). 86,7% mentioned that research studies in community pharmacy should be based in collaboration protocols, 75,6% that community pharmacies should be organized in a network in order to run studies and 73,5% that there must be a body that certifies community pharmacies in the context of research. The model in which “research projects are designed by institutional partners and the pharmacy carries out the project” (model 2) and the one in which “ the initiative of the research project is from the pharmacy but supported by the university” (model 3) were preferred. 69.2% of researchers showed availability or interest to collaborate with a community pharmacy R&D Unit.

Conclusion: Overall, the need to develop research studies in the community pharmacy practice is recognized and the idea of creating a community pharmacy R&D unit was very well received by researchers. Research studies should preferably be based on models that bring the community pharmacy/pharmacist closer to academia/research centers by setting collaborative protocols. Professional organizations should set a strategy to foster community pharmacy-practice research by changing minds-ets and practices and by certifying community pharmacies that conduct research studies. Promoting a network organization of community pharmacies that run research studies was supported.

-462-Usage and Preferences of Drug Information Resources in First- Through Fourth-Year Pharmacy Students. Parupia Z, Jarvis-Ruble C, Golia A, Palm Beach Atlantic University Lloyd L. Gregory School of Pharmacy. Email: Zenub_Parupia@pba.edu.

Objective: Understanding how to apply drug information (DI) resources is a fundamental skill taught to students in many universities. Students are taught to navigate these resources and are expected to apply them throughout the curriculum. Over time student preferences can emerge and certain resources may go underutilized, despite investment by the school’s subscriptions. This study seeks to evaluate preferences, frequency of utilization, and satisfaction with available DI resources among first through fourth year pharmacy students at a single, private university.

Methods: To evaluate the current knowledge, preferences, and usage amount of various DI resources, a survey was created via Google Forms. This survey consisted of up to 26 questions designed to collect background information and assess the familiarity, frequency of use, and recognition of DI resources among first through fourth year pharmacy students at a single university. Currently, the number of students enrolled in the program is 257. The survey was distributed in mid-August through internal school email listservs and remained available for a three-week period. Students were sent four survey reminders via email. Respondents in each graduating year were entered in a randomized raffle for a $10 gift card (four gift cards total) and limited to one submission per active survey link. Collected data was analyzed using descriptive statistics.

Final Results: A total of 85 students (33% of the school population) participated in the survey. The mean student age was 25.8 years,

mostly female (76%), had a bachelor's degree (64.7%), and had no prior exposure to DI resources before pharmacy school (65.9%). Prior to pharmacy school, Google Scholar (57/125, 46.0%) and Lexicomp (31/142, 21.8%) were the most familiar secondary and tertiary resources, respectively. The most frequently used secondary and tertiary resources were PubMed (59/85, 69.4%) and Lexicomp (50/85, 58.8%). The most frequently cited reason was "ease of navigation" for both resources. The preferred method for accessing tertiary resources were via a laptop (52/85, 61.1%) while the most common method of reading the information was electronically rather than printed (70/85, 82.4%). The majority of students were confident when asked their ability to use secondary DI resources (77/85, 90.6% "agree" or "strongly agree") and tertiary DI resources (70/85, 82.4% "agree" or "strongly agree"). Nearly all students believed that being familiar with using DI resources is an important skill to acquire for pharmacists (83/85, 97.6%).

Conclusions/Implications: Students appear to increase utilization of resources as they advance throughout the curriculum. PubMed and Lexicomp were the most utilized DI resources among all classes. The most common influence on resource preference was "ease of navigation" and most preferred means of access was a laptop. Most participants rated themselves as "confident" utilizing secondary and tertiary resources, with a greater percentage being more confident in secondary. Students agree that drug information is crucial to the profession. Further research may help determine if trends are consistent across multiple pharmacy schools and if a correlation exists between confidence and application of DI resources.

463-Research Opportunities in Accredited PharmD programs of the United States – Student Involvement. Yanovich A, McKeirnan K, College of Pharmacy and Pharmaceutical Sciences, Washington State University. Email: alina.yanovich@wsu.edu.

Objective: The objective of this study was to identify the most popular types of research opportunities among Pharm.D. students during their professional education and to examine the relationship between the types of research opportunities students are involved in and their choice of research-oriented positions after graduation. Research is essential for moving pharmacy practice forward, so development of research-related skills is crucial for building a successful career in pharmacy.

Methods: Official representatives from all accredited School/College of Pharmacy (S/COP) in the US (n =143) were identified through manual review of the S/COP's websites and contacted by email requesting to complete the online survey of the relevant programmatic information. The survey included 16 questions with yes/no, type-in numerical and short-answer types of answers and was anticipated to take no more than 15 minutes to complete. In case of no initial response received within 8 weeks, a second email to representatives of the S/COP was sent. All received survey responses were screened for completion before analysis.

Results: The survey was returned by 78 (55%) of the contacted S/COPs, of which 59 (41% of the contacted) provided complete information whereas 19 (13% of the contacted) provided only partial information. All responses were included in the analysis. Many responded S/COPs reported offering at least 4 different types of research opportunities at a time (24 of 76 responded S/COPs (32%)). Of the research opportunities identified as common via manual review of S/COPs websites, the most pursued among students were one semester long Elective Independent Study courses (at 42 of 50 responded S/COPs, 84%) and direct involvement in faculty research projects arranged on individual bases of varying lengths (at 42 of 50 responded S/COPs, 84%). Of 39 S/COPs that reported Pharm.D. students involved in these particular types of opportunities, 27 (69%) declared these students later engaging in research-focused residency/fellowship, 30 (78%) discovered these students enrolled in Pharm.D./Ph.D. program or in a Ph.D. program after completion of the Pharm.D., and 28 (72%) identified these students being hired on a research-focused pharmacy positions after graduation. However, the number of students generally involved in any kind of research opportunities in many of responded S/COP did not exceed 5 (19 of 50 responded S/COPs (40%)).

Implications/Conclusions: The study suggests that in the majority of responded S/COPs Elective Independent Study courses and direct involvement of students in faculty research projects were identified as the most prevalent for Pharm.D. students to engage in. Analysis of collected data demonstrated a positive association between involvement in these particular research opportunities while pursuing a Pharm.D. degree and students' choice to pursue additional education or a pharmacy career strongly connected to pharmacy research. The study also shows a variable involvement of the pharmacy students in research opportunities between S/COPs, raising the possibility of a variable and inequal exposure of PharmD students to research across the country. Future studies are thus needed to correlate pharmacy program sizes with student involvement in research in S/COPs and to identify reasons behind students favoring certain types of research opportunities over others.

Public Health

464-Pharmacy Student-Led Peer-to-Peer Education on the Opioid Epidemic on College Campuses. Bessada Y, Allard M, Gorseth A, Fenton V, Le Van Long E, LaPlante R, Dominelli A, Boyd J, Albany College of Pharmacy and Health Sciences. Email: youssef.bessada@acphs.edu.

Objective: In 2018, opioid misuse among US adults aged 18-25 was reported to be 5.6%. Administrators believe that opioid abuse on college campuses may even be underestimated. Colleges across the country are combatting this epidemic with different strategies including websites for easy access to resources, utilizing campus physicians and staff, sober dorms and naloxone training, with varying effectiveness. Peer-to-peer education has been shown to be highly effective in many aspects of the medical field, including HIV education, the use of advance care planning, improving diabetes prevention, and in fall prevention. In regards to opioids, this method makes struggling students feel less stigmatized and more supported, as they feel a sense of community and can reach out more easily

to their peers. As such, a group of pharmacy students from the Albany Chapter of the American Pharmacists Association Academy of Student Pharmacists (APhA-ASP) formed a coalition called the Student Advocates Against Opioid Abuse (SAAOA). The goal of the group was to provide peer-to-peer education led by pharmacy students on the opioid epidemic, the dangers of opioid abuse and misuse and to open the door of communication regarding the stigma of addiction among college students. The impact of this education was analyzed through survey questions before, during and after presentations to assess the effectiveness of the education to the students.

Methods: The initial presentation given by SAAOA in January 2018 encompassed three main categories: background on opioid addiction, impact of addiction, and a brief overview of treatment options. The response from the student-body and faculty was encouraging, so the project continued with adjustments and improvements. This presentation was given to second-year students that were directly affected by the opioid epidemic in March 2018, and a third time at Siena College, a neighboring non-health sciences institution, in April 2018. The presentation was adjusted to include a personal story of the impact of addiction, emphasized eliminating the stigma of addiction, and included greater discussion regarding emergency and recovery treatment options. This presentation was given during freshman orientation in August 2018, and at Siena College in November 2018. The presentation was altered again to include interactive components and assess student learning from the session. In February 2019, SAAOA joined Siena College again for an interactive and collaborative learning session where before and after questions were assessed via Kahoot. The presentations extended to the ACPHS Vermont Campus and another freshman orientation, and will continue. Further presentations will include similar data collection to the February 2019 session.

Preliminary Results: 54 students participated in the February 2019 session. In the post session, 8-10 participated were eliminated from calculations due to question non-response. There was statistical significance in the following questions medical use of opioids (19% change, p=0.027), knowing the signs of addiction (30% change, p=0.0006), being comfortable talking about the subject matter (41% change, p=<0.0001), and knowing what a halfway house is used for during the recovery process (31% change, p=0.0003).

Conclusions/Implications: Results Pending.

465-Descriptive Analyses of Naloxone Co-Prescribing and Co-Dispensing in the Rhode Island (RI) Prescription Drug Monitoring Program (PDMP). Bishop B, University of Rhode Island, Chambers L, Rhode Island Department of Health. Email: brian_bishop@my.uri.edu.

Objective: Rhode Island implemented a naloxone co-prescribing mandate in July 2018. Using PDMP data, we assess and describe patient populations throughout community pharmacies in RI that were both co-prescribed and co-dispensed naloxone with high-risk medication regimens, identify gaps and best practices, and develop targeted solutions to optimize naloxone saturation statewide.

Methods: De-identified RI PDMP data from October 2017 through July 2019 was analyzed. RI PDMP data includes all opioid antagonists and controlled substances filled through insurance or cash payment. Data were analyzed monthly to characterize the percentage of patients who were co-dispensed naloxone with opioids greater than or equal to 50 morphine milligram equivalents (MME), opioids greater than or equal to 90 MME, as well as co-dispensed opioids and benzodiazepines (within 30 days and the Pharmacy Quality Alliance (PQA) definition), either through a prescriber or pharmacy standing order. Trends in naloxone co-prescribing were assessed to identify changes in co-prescribing after a mandated naloxone co-prescribing regulation. Patients under the age of 18 and non-RI residents were excluded from the analyses.

Results: From October 2017 to July 2019 a majority of naloxone kits distributed were written prescriptions (87.1%; 11,795 written vs. 1,745 standing order). The co-dispensing of naloxone for patients with opioid-benzodiazepine overlap within the past 30 days increased from 1.7% (315/18,511) in June 2018 to 23.5% (1,613/6,854) in July 2019. Using the PQA definition for opioid-benzodiazepine overlap, co-dispensing rates increased from 2.8% (194/6,915) in June 2018 to 31.0% (1,249/4,027) in July 2019. The co-dispensing of naloxone for patients with an opioid dose greater than or equal to 90 MME increased from 5.1% (180/3,514) in June 2018 to 28% (288/1,029) in July 2019. Similarly, the co-dispensing of naloxone for patients with an opioid dose greater than or equal to 50 MME increased from 4.8% (300/6,310) in June 2018 to 22% (408/1,858) in July 2019. Co-dispensing of naloxone for patients with either greater than or equal to 50 MME or opioid-benzodiazepine overlap according to the PQA definition increased from 3.6% (406/11,250) in June 2018 to 28% (1,542/5,511) in July 2019.

Conclusions: PDMPs are ideal databases for analyzing naloxone co-dispensing because they capture all dispensed prescriptions in real-time and are less expensive to access and monitor than claims databases. All subgroups had an increase in the rate of naloxone co-prescribing, which was likely due to both the decrease in inappropriate opioid prescribing and the July 2018 regulation. Since PDMP data only records naloxone dispensed and fails to capture naloxone co-prescribed that was never dispensed, our co-dispensed measures can be used as a lower bound for the rate of naloxone co-prescribing in RI.

466-Impact of State-Mandated HIV/STI Education on Corresponding Transmission Rates. Brooks C, Nephron Pharmaceutical Corporation, Ware K, South University College of Pharmacy. Email: chrishaun_b@yahoo.com.

Objective: Increases in sexually transmitted infections continue to occur nationally and internationally. While numerous STIs are noted, syphilis, chlamydia, gonorrhea, and human immunodeficiency virus are most often causes for concern. Within the United States, states have latitude in the extent of education about these disease states provided to their constituents. As some states

mandate STI education whereas others do not, understanding how states compare based on mandate statuses would be helpful. The purpose of this study was to assess if state mandate statuses affected average transmission rates of the aforementioned STIs over multiple years.

Methods: This retrospective study relied upon data from the Centers for Disease Control and Prevention collected on syphilis, gonorrhea, chlamydia, and HIV rates over the course of 2013 to 2017. These rates populated per 100,000 population. Report and information on state mandated STI/HIV education from the Guttmacher Institute. Two groups consisted of individual states and the District of Columbia; states that mandate STI/HIV educational curriculums versus those that do not. A component of the analysis featured a series of two-sided independent t-tests comparing the independent variable, STI/HIV education status (Yes or No), to dependent variables, rates of syphilis, gonorrhea, chlamydia, and HIV. An additional aspect of the statistical analysis called upon a one-way multivariate analysis of variance (one-way MANOVA) to evaluate two groups of the independent variable, mandate status and non-mandate status, in relation to the series of dependent variables, rates of infections. Means and standard deviations associated with the two-sided independent t-tests and one-way MANOVA were included in the study. Absence or presence of STI/HIV education mandate status reflected the current state of legislation at the time of data collection. Statistical significance was associated with $p<.05$.

Results: Thirty-four states in comparison to 17, 50 states and the District of Columbia, mandated STI/HIV Education in comparison to their counterparts. The mean rates for syphilis, chlamydia, gonorrhea, and HIV for 2013 – 2017 were 5.97, 472, 122, and 11.96, respectively. Box and whisker plots physically inspected differences in STI/HIV education mandate states as opposed to non-mandated as it pertains to STI acquisition rates. Any outliers identified in the data set were included for continuity of reporting. An assumption of equal variance within the data sets occurred. The relationship between the two groups of the independent variable, mandate status and non-mandate status, in light of corresponding STI rates did not reach statistical significance ($p=.162$). None of the rates of the four STIs individually, syphilis ($p=.460$), chlamydia ($p=.605$), gonorrhea ($p=.093$), and HIV ($p=.693$) were shown to differ statistically significantly between states that mandate STI/HIV educations versus those that do not.

Conclusion: While this study was prone to several confounding factors, there is ostensibly room for improvement in the quality of STI/HIV educational content delivered in classroom settings. It is plausible that states may vacillate periodically from mandated to non-mandated or non-mandated to mandated statuses over time. Pharmacists and pharmacy students are ideally suited to educate at all levels which may offer additional practicality to ongoing STI/HIV prevention techniques.

468-High Blood Pressure, Quality of Life, and Dental Health in a Volunteers in Medicine Clinic (VIM). Edwards S, Hughes N, Roke Thomas M, Wilkes University APhA-ASP. Email: skyee.edwards@wilkes.edu.

Objective: Dental care is important in maintaining a healthy life-style. Those who have unhealthy teeth can have high diastolic blood pressure and a series of other health issues. According to the American Heart Association (2018), patients with poor dental health may suffer from uncontrollable high blood pressure. Also, those who have healthy teeth have more self-confidence and a greater quality of life (Sischo & Broder, 2011). Also, patients who have poor dental health have a lower quality of life than patients who have good dental health. Volunteers in Medicine (VIM) is a free health care clinic that serves the working poor in Northeastern PA. Many of these patients also need dental care. In the past few years, the VIM has also established a dental clinic to serve the underserved maintain good dental care. Often patients are in severe pain and cannot afford to pay for dental services. The VIM has many volunteer dentists and a full-time paid dentist to help care for these patients. Objective: The primary objective of this study is to determine if patients with poor dental health also have high blood pressure. The secondary purpose is to determine if poor dental health has an effect on patient quality of life.

Methods: At a VIM clinic, patient's blood pressure will be taken in order to determine if patients who have poor dental health also suffer from high blood pressure. In trying to better understand the impact of dental health on patient quality of life, this research project will survey dental patients of the VIM clinic with the OHIP-14 questionnaire to measure quality of life. It consists of 14 items that determine the effect of poor dental health on quality of life. Patient's blood pressure will also be taken in order to determine if patients with poor dental health also suffer from high blood pressure.

Preliminary/Final Results: In-progress.

Conclusions/Implications: In-progress.

469-Burden Due to Sepsis: A Population-based Study. Hwang M, Park T, St. John's University, Kim Y, Seoul National University Bundang Hospital. Email: hwangm@stjohns.edu

Objective: Sepsis is "a serious blood infection that produces systemic inflammation and may lead to organ failure, shock, and even death". According to Centers for Disease Control and Prevention (CDC), at least 1.7 million adults in America develop sepsis each year and 30% of patient who die in a hospital have sepsis. Furthermore, sepsis has been identified as the most expensive condition to treat by the Agency for Healthcare Research and Quality (AHRQ). Numerous studies show that pharmacists are valuable members of the interdisciplinary team in treating patients with sepsis; when pharmacists were involved in the care, patients were more likely to receive appropriate initial antibiotics in a faster time and also in some cases, reduce mortality. The objective of this study is to characterize patient-level factors, source of hospital admission, length and cost of hospitalization, and discharge disposition variations

following hospitalization for sepsis.

Methods: A cross-sectional, retrospective population-based study using the 2016 Healthcare Cost and Utilization Project (HCUP) National Inpatient Sample (NIS) data will be conducted. Patients 18 years and older, who are hospitalized for sepsis, will be included in this study. Patients with sepsis will be identified using the ICD-10-CM of Septicemia. Guided by the Andersen model of healthcare utilization, predisposing factors (e.g., age, gender, race), enabling factors (e.g., insurance, median household income), and need factors (e.g., comorbidities) will be explored to examine patient-level factors. Source of admission will determine proportion of patients who were admitted to the hospital through emergency department, another hospital, long-term care facility or other. Length of hospitalization will be calculated as average length of hospitalization for the condition. Cost of hospitalization will be calculated as average cost per year per patient. Discharge disposition will determine proportion of patients who were discharged to a short-term hospital, skilled nursing facility, intermediate care facility, home health care or other.

Preliminary Results/Conclusion: The U.S. healthcare system spends $23.7 billion (6.2% of the aggregate cost for all hospitalizations) on treating patients hospitalized for sepsis. This study can provide valuable information that pharmacists can use to identify and develop interventions that may assist in optimizing economical, clinical, and humanistic outcomes from sepsis.

470-Optimizing the Use of Hormone Replacement Therapy among Patients with Endometrial Cancer: A Global Systematic Review. Kahaleh A, Sajan S, Patel P, Roosevelt University College of Pharmacy. Email: AKahaleh@roosevelt.edu.

Objective: Hormone replacement therapy (HRT) is crucial for alleviating symptoms in endometrial cancer survivors who experience natural and/or surgically induced menopause. However, many providers hesitate to prescribe HRT to endometrial cancer survivors due to the misinterpretation that hormone therapy may increase the risk of recurrence of cancer. This systematic review was designed to analyze the HRT use in recent studies to relief menopausal symptom and whether it may increase the risk of recurrence of endometrial cancer.

Methods: This systematic review included a total of 20 global studies. Nine of the studies met the inclusion criteria. These global studies were conducted in North America, Asia, and Europe in the past two decades. The study designs included randomized control trials, meta-analyses, article reviews, matched control studies, and retrospective and prospective case controls. The study participants included women who underwent hysterectomy and survived endometrial cancer. The primary outcome of the study was to examine the impact of HRT on the frequency of recurrence in women who survived endometrial cancer. The secondary outcome was the impact of hormone replacement therapy on reducing the symptoms of menopause among women who survived endometrial cancer. In addition, economic and humanistic outcomes were also assessed using the Economic, Clinical, and Humanistic Outcomes (ECHO) model.

Final Results: The majority of the clinical studies showed no significant increase in recurrence of endometrial cancer in patients using HRT compared to the control group. Moreover, multiple studies revealed a longer disease-free interval rate among patients who used HRT compared with patients in the control group. One study reported a protective effect showed in cancer survivors who used a combination of estrogen and progestin as opposed to using one form alone for symptom control. Although there were fewer studies which focused on economic and humanistic outcomes, the following findings were observed. Economically, the use of HRT for menopausal symptom relief is cost-effective. That said, there is a lack of specific studies on the cost-effectiveness of HRT use among endometrial cancer survivors. Also, there is limited research on assessing humanistic outcomes among cancer survivors who are using HRT . These studies showed an improved quality of life among post-menopausal women who use HRT.

Conclusions/Implications: Based on the findings of this systematic review there is a lack of evidence to support that the use of hormone replacement therapy is directly linked to an increased rate of recurrence of endometrial cancer among survivors. Closing the gap in education is needed to ensure that endometrial cancer survivors receive the optimal care to improve their outcomes. Pharmacists are poised to provide counseling on the appropriate use of HRT. For future research, it may be beneficial to conduct more studies on economic and humanistic outcomes using the ECHO model

471-Alcohol-Related Health Outcomes Among States of Different Political Categorization. Khalil M, Notre Dame of Maryland University Scool of Pharmacy, Thigpen J, Notre Dame of Maryland Univeristy School of Pharmacy. Email: Mkhalil1@live.ndm.edu.

Objective: This project aimed to determine if political party representation of state governments were associated with differences in alcohol-related health outcomes in adults (alcohol dependence/abuse, heavy drinking, needing treatment, cost per capita, and alcohol attributable deaths). Alcohol use is prevalent and has increased from 65.4% to 72.7% between 2002 and 2013 in the U.S., killing 88,000 people annually. In addition, as of 2015, 15.1 million adults reported having Diagnostic and Statistical Manual of Mental Disorders Alcohol Use Disorders (DSM-IV AUD). Only 6.7% of adults with AUD received treatment. This constitutes a public health crisis. The role of government in health care policy has expanded over recent years. However, little is known if and to what degree political policies impact alcohol-related public health outcomes. Given the differences in political philosophy and resulting policies, do Democrats and Republican dominated state governments have different levels of success in mitigating this crisis?

Methods: The National Conference of State Legislatures (NCSL) was utilized to determine the political party representation of state representatives in each state from 2009-2018. A political party controlled the state government for a particular year if it had a trifecta, which constituted control of ≥50% House, ≥50% Senate, and the Governorship. To be deemed “Red” (Republican) or “Blue”

(Democrat), the state must have had a trifecta for ≥7 of the 10 years (2009-2018). States with < 7 trifectas were deemed "Divided". Five alcohol-related health outcomes were assessed. Data was obtained from the following sources: Behavioral Risk Factor Surveillance System (BRFSS), National Survey on Drug Use and Health (NSDUH), and Centers of Disease Control and Prevention (CDC). Alcohol dependence/abuse was based on definitions found in the DSM-IV (years 2016-2017). Heavy drinkers were defined as adult men having more than 14 drinks per week and adult women having more than 7 drinks per week (year 2017). Needing treatment is classified as individuals reporting needing but not receiving treatment for alcohol use in the past year (years 2016-2017). The final two outcomes assessed were alcohol economic cost per capita (year 2010) and alcohol attributable deaths (years 2006-2010). IBM SPSS software was used to perform ANOVA and post-hoc tests to compare outcomes amongst, Red, Blue, and Divided states.

Results: Political categorization yielded 20 Red, 5 Blue, and 25 Divided states. When comparing states, there were no statistically significance differences (p-value ≤ 0.05) for all five alcohol-related outcomes between Red, Blue, and Divided states. Although not statistically significant, Blue states had higher means for all outcomes compared to Red and Divided states.

Implications/Conclusions: These results leads us to question whether partisan leaning policies and efforts at the state level impact alcohol-related outcomes. Future efforts should explore additional alcohol-related health outcomes and the effectiveness of partisan driven approaches, including the possibility that neither political party is a thought leader and that the crisis requires a bipartisan approach.

472-Emergency Department Visits by Patients on Anticoagulation Therapy: A Population-based Study. Kim Y, Seoul National University Bundang Hospital, Hwang M, Park T, St. John's University. Email: kimy2@stjohns.edu.

Objective: One of the lead cause of emergency department (ED) visit for adverse drug events is due to anticoagulants. Anticoagulants, also known as blood thinners, "are medicines that help prevent blood clots. They're given to people at a high risk of getting clots, to reduce their chances of developing serious conditions such as strokes and heart attacks". As drug experts, pharmacists can play an important role in educating healthcare providers and patients regarding benefits and risks of anticoagulants and monitoring patients on anticoagulants. Furthermore, pharmacists as a member of an interdisciplinary team can help to reduce the ED visits for patient on anticoagulant therapy. The objective of this study is to examine frequency and cost of ED visit, and variations in disposition from ED by patients on anticoagulation therapy. In addition, characteristics of patients on anticoagulation therapy visiting ED will be explored using the Andersen model of healthcare utilization.

Methods: A cross-sectional, retrospective population-based study using the 2016 Healthcare Cost and Utilization Project (HCUP) National Emergency Department Sample (NEDS) data will be conducted. Patients on anticoagulation therapy, who are 18 years and older, admitted to an ED will be included in this study. Patients on anticoagulation therapy will be identified using the ICD-10-CM of Z79.01 of "Long term (current) use of anticoagulants". Cost of ED visit will be calculated as average cost per visit per patient. Disposition from ED will examine proportion of patients admitted as an inpatient to the hospital, transferred to short-term hospital, skilled nursing or intermediate care facility, home health care, died in ED, or other. Characteristics of patients on anticoagulation therapy vising ED will be explored using the Andersen model of healthcare utilization: predisposing factors (e.g., age, gender, race), enabling factors (e.g., insurance, median household income), and need factors (e.g., comorbidities).

Preliminary Results/Conclusion: Previous studies show that greater efficiency is achieved when pharmacists are involved in managing anticoagulation therapy. This study can provide valuable information that pharmacists can use to identify and develop interventions that may assist to enhance outcomes among patients on anticoagulation therapy by reducing the number of ED visits.

473-Pharmacy Nonprescription Syringe (NPS) Policy Survey. Kubicsko D, University of Rhode Island. Email: dkubicsko@my.uri.edu.

Objective: Vulnerable populations face barriers to sterile syringe access. Community pharmacies can offer sustainable, low-barrier syringe access, but rules for this access vary by state. In 2019, The APhA House of Delegates passed policies to support harm reduction programs that provide and promote consistent, unrestricted, and immediate access to evidence-based interventions to enhance the health of people who use drugs, including sterile syringe and needle access and safe disposal. The purpose of this study is to obtain information directly from state board of pharmacy administrators on current bills, laws, regulations, procedures, and policies related to nonprescription sterile needles and syringe access from community pharmacies. The goal is to create a comprehensive guide specifically designed for community pharmacy pharmacists based on nonprescription syringe policies in each state; Pharmacists have demonstrated a willingness to dispense NPS provided they have a clear understanding of their legal authority to do so. The objective of this guide is to help pharmacists enhance public health harm reduction strategies to mitigate the consequences of opioid overdose and HIV/HCV syndemic.

Methods: A Rhode Island Department of Health/University of Rhode Island IRB-approved survey link (Qualtrics, Provo, UT) was emailed to each jurisdiction's contact person listed on the National Association of Boards of Pharmacy (NABP) website in August and September, 2019. Survey questions included information regarding point of sale (POS) requirements, recordkeeping, dissemination and forms of educational material and any additional sale restrictions. If the survey wasn't completed within ten business days, after reminder emails, the subjects were contacted via phone number listed on the NABP website to conduct the survey on the phone or by email. Descriptive statistics were used to report survey responses.

Results: Research is in progress.

Conclusions: Research is in progress.

474-Characteristics of Patients Admitted for Dermatological Diseases. Park T, Hwang M, St. John's University, Kim Y, Seoul National University Bundang Hospital. Email: parkt@stjohns.edu.

Objective: A large number of people are affected by various dermatological conditions each year. Even though many dermatological conditions can be treated in an outpatient setting, several conditions mandate inpatient admission. The objective of this study is to explore characteristics of patients admitted to a hospital due to dermatological conditions. In addition, frequency, length and cost of hospitalization, variations in the route of hospital admission and discharge disposition for patients with dermatological conditions will be examined.

Methods: A cross-sectional, retrospective population-based study using the 2016 Healthcare Cost and Utilization Project (HCUP) National Inpatient Sample (NIS) data will be conducted. Patients admitted to the hospital due to dermatological conditions will be identified using the ICD-10-CM ranging from L20 to L30. Characteristics of patients admitted to a hospital due to dermatological conditions will be explored using the Andersen model of healthcare utilization -predisposing factors (e.g., age, gender, race), enabling factors (e.g., insurance, median household income), and need factors (e.g., comorbidities) will be examined. The frequency of hospitalization by the ICD-10-CM will be characterized. Length of hospitalization will be calculated as average length of hospitalization for each dermatological condition identified. Cost of hospitalization will be calculated as average cost per year per patient for the identified conditions. Source of admission to the hospital will be determined to explore proportion of patients who were admitted to the hospital through emergency department, another hospital, long-term care facility or other. Furthermore, discharge disposition will be examined to explore proportion of patients who were discharged to a short-term hospital, skilled nursing facility, intermediate care facility, home health care or other.

Preliminary Results/Conclusion: Many patients with dermatological conditions choose self-care to manage their conditions. Community pharmacists play an important role helping patients manage their conditions through self-care. Therefore, patient characteristics identified in this study can be valuable information to pharmacists in identifying patients who might be in need of a guidance in managing dermatological conditions. Moreover, pharmacists work in various health care settings as a member of an interdisciplinary team, where they are in a position to enhance management of dermatological conditions. Route of hospital admission and discharge disposition information examined in this study can be used by pharmacists to identify and develop interventions that may assist in enhancing management of dermatological conditions.

475-Program Outcomes of a Statewide Approach to Screen for Opioid Misuse and Accidental Overdose within Community Pharmacies. Skoy E, Eukel H, Strand M, Werremeyer A, Frenzel O, North Dakota State University, Steig J, Quality Health Associates of North Dakota. Email: elizabeth.skoy@ndsu.edu.

Objective: To describe outcomes of a statewide approach to screen for opioid misuse and accidental overdose within community pharmacies.

Methods: ONE (Opioid and Naloxone Education) Rx is statewide program that provides screening for opioid misuse and accidental overdose within community pharmacies. The screening is provided electronically or paper based through a Patient Intake Form. The form includes the Opioid Risk Took (ORT) to assess risk for opioid use disorder and questions addressing possible contributions to accidental overdose, such as current disease states, social history, and concurrent medications. Pharmacists utilize the information gathered on the form to determine appropriate interventions and recommendations such as: education on opioid use disorder, referral to community support services, prescribing and dispensing of naloxone, and tailored patient consultation. The results from the Patient Intake Form and pharmacist interventions are entered into an online patient management system called REDCap. Data collection includes: the number of patients screened, the frequency and type of interventions made by the pharmacist, and patient acceptance of pharmacist prescribed naloxone. Pharmacists are reimbursed for their time and efforts at a rate of $20 for each completed screening.

Results: The ONE Rx program was implemented in the Fall of 2018 and is currently ongoing across the state. Since the initiation, 67 pharmacies have enrolled in ONE Rx, and those pharmacies have completed over 2700 screenings. Of those 2700 patients screened using the Patient Intake Form, 17% have been identified through screening as at high risk for opioid use disorder. Pharmacists have then been able to make appropriate interventions by discussing the patient's risk of opioid use disorder with 87% of those identified as at risk, and recommend community and support services to 16%. In addition, 24% of patients screened have been identified as at risk for accidental overdose based on medication interactions, concomitant disease states or social history. For those at risk of accidental overdose, pharmacists recommend naloxone and 12% of those patients have accepted pharmacist prescribed naloxone. This is over 8 times the rate of the 2018 national average of 1.45% of naloxone prescriptions per high risk opioid.

Conclusion: Successful implementation of patient screening for opioid misuse and accidental overdose by pharmacists in the community setting has successfully been implemented statewide through the ONE Rx Program. With a reimbursement for value provided by the pharmacist at $20 per screening, this has demonstrated pharmacists' value in addressing the national opioid crisis. In addition, this widespread implementation has provided insight to the number of patients prescribed opioids that are at risk for opioid

use disorder and accidental overdose.

476-Increasing Access of Influenza Vaccines to the Homeless in Rochester, New York. Snyder J, Sutton Burke E, Birnie C, Wegmans School of Pharmacy at St. John Fisher College. Email: jms05373@sjfc.edu.

Objective: This project aims to assess influenza vaccination history and motivation to receive an influenza vaccination in the homeless and those at risk of homelessness in Rochester, New York. This project will also introduce a collaboration between a school of pharmacy and a local organization to increase access to annual influenza vaccination for patients experiencing homelessness and those at risk of homelessness. The homeless populations in developed countries are predisposed to infectious diseases. Respiratory infections often spread quickly through the homeless due to high rates of smoking and chronic lung disease and conditions created by crowded shelters. Acute conditions are often difficult to treat in the homeless population due to cost constraints and low adherence to prescribed medications. Difficulty in treating acute diseases in the homeless population prompts increased efforts to utilize prevention measures such as vaccinations. U.S. Census Bureau data in 2017 found Rochester, New York to be the third-poorest city among the 75 largest in the country and, according to the 2018 State of Homelessness survey in New York State, 835 people in Monroe County were homeless on a given night.

Methods: This descriptive study will establish a partnership with a local organization, Project Homeless Connect, and asses influenza vaccination status and barriers in the homeless and those at risk of homelessness. An influenza vaccine clinic will be organized and offered to attendees of an upcoming outreach event to serve the homeless and those at risk of homelessness. Upon entrance into the venue, participants ≥18 years of age will be asked to complete a voluntary anonymous paper questionnaire to address how to best serve the influenza vaccine needs of the target population in the future. As completion of the questionnaire is voluntary, refusal of questionnaire will have no impact on the patient's ability to receive the influenza vaccination. Pharmacy students will be available to assist with the questionnaire and verbal reading of the consent statement. Questionnaires will be given to 500 participants at the event. The questionnaire will assess demographic information, lifestyle information (for example, housing type, transportation preferences, family support), influenza vaccination history, barriers to immunization, and motivation to receive an influenza vaccination. Using descriptive statistics, data will be compiled and analyzed. Results and trends in data will allow for more effective future vaccination efforts in this population.

Preliminary Results: A partnership with Project Homeless Connect and a local pharmacy school has been established to provide influenza vaccines to the homeless and those at risk of homelessness at the annual Day of Services event scheduled for October 15, 2019. The immunization clinic will be staffed by pharmacists and pharmacy students from the pharmacy school. Influenza immunizations will be provided and survey data will be gathered on the day of the event. This study is currently in progress.

Conclusions/Implications: In progress, the findings of this study will be used to determine motivation and aid in reducing barriers to access to immunizations in the future.

477-Removal of Cost as a Barrier to Community Pharmacist-Initiated Prescribing and Dispensing of Naloxone to Reduce Overdose by Opioids. Teeter B, Curran G, Thannisch M, Martin B, Zaller N, Mosley C, Winston K, University of Arkansas for Medical Sciences. Email: BSTeeter@UAMS.edu.

Objective: The objective of this study was to test Evidence-Based Quality Improvement (EBQI)-developed protocols/materials and implementation strategies to encourage community pharmacists to initiate conversations with high-risk patients about naloxone after the removal of pharmacist-reported barriers to patient acceptance of naloxone recommendations. Opioid use, abuse, diversion, and overdose deaths have continued to rise over the past 20 years. All 50 states and the District of Columbia have expanded the pharmacists' role in combating the opioid crisis by allowing pharmacists to dispense naloxone pursuant to a standing order, granting prescriptive authority to initiate naloxone prescriptions, or allowing the dispensing of naloxone without a prescription. Our previous research developed and tested protocols/materials and implementation strategies to encourage pharmacists to initiate conversations with high-risk patients and recommend naloxone. Two months post-implementation of these materials/protocols and implementation strategies, pharmacists at two pilot pharmacies had dispensed naloxone to 1/3 of their high-risk patients (44/130=34%). However, interviews with participating pharmacists revealed cost of naloxone was a major barrier for patients that required further research.

Methods: This study piloted materials/protocols and implementation strategies developed through an EBQI process with multiple stakeholders from our partner pharmacy, the state pharmacists association, and our research team. The materials include informational posters, pamphlets, a vial cap sticker, and scripts for conversations with high-risk patients. Our previous study pilot tested these materials/protocols and implementation strategies alone in two pharmacies for two months. For this study, both pharmacies continued to utilize the materials/protocols and implementation strategies to approach their high-risk patients and recommend naloxone. However, this study added a zero-copay condition in one of the pharmacies. In this pharmacy, every patient interested in purchasing naloxone would have zero copay. Therefore, when a patient expressed interest in purchasing naloxone after the intervention, the pharmacist would run the patient's insurance, inform the patient of their copay, and dispense naloxone if the patient was still interested. After a two month pilot period, number of naloxone prescriptions dispensed at both pharmacies (1 zero-copay/1 usual copay) were compared.

Results: After the two month pilot period, the pharmacy with the zero-copay condition had dispensed an additional 22 prescriptions of naloxone while the pharmacy with copays as usual had dispensed two. Average copay per naloxone prescription was $57.70 and

ranged from $3.80 to $137.00. During a debriefing discussion with the pharmacist at the zero-copay site, barriers to dispensing naloxone included the patient's belief that they are not at risk and disinterest in discussing naloxone with the pharmacist for a second or third time.

Conclusions/Implications: Increased access to naloxone is diminished by exorbitant copayments charged to high-risk patients. When naloxone is recommended by a pharmacist, many are dispensed naloxone if they are not required to pay a copay. However, even after multiple contacts by a pharmacist, very few high-risk patients accept the pharmacist recommendation if asked to pay a copayment. The average copay amount charged to patients for this life-saving medication is unreasonable. Changes in policy are needed to ensure affordable access to naloxone for high-risk patients.

478-Safety of Antibiotics for Plague During Pregnancy: A Systematic Review. Yu P, Tran E, Parker C, Kim H, Yee E, Broussard C, Yu Y, Meaney-Delman D, Centers for Disease Control and Prevention. Email: pby7@cdc.gov.

Objective: Plague is a zoonotic disease caused by the bacterium, Yersinia pestis, which can be life-threatening. While naturally-occurring human cases of plague are rare in the United States, outbreaks occur in sub-Saharan Africa and Madagascar. In addition, Y. pestis has been identified as a potential bioterrorism agent. Pneumonic plague is the most likely clinical form to occur in a bioterrorism event and some person-to-person transmission is possible. Given the severe morbidity and mortality associated with plague, timely intervention with appropriate antibiotics is critical for postexposure prophylaxis (PEP) and treatment of plague for all exposed populations, including pregnant women. However, antibiotic recommendations for pregnant women and non-pregnant individuals may differ, depending on the safety profiles of the antibiotics. To inform antibiotic choices, we conducted a systematic review of the safety of antibiotics considered for PEP and treatment of plague during pregnancy.

Methods: Our primary data sources were five scientific literature databases to identify articles, with no date restriction, containing primary data related to the safety of nine antibiotics considered for PEP and treatment of plague during pregnancy (amikacin, chloramphenicol, doxycycline, gentamicin, plazomicin, streptomycin, sulfadiazine, trimethoprim-sulfamethoxazole (TMP-SMX), and tobramycin). We abstracted primary data on the use of antibiotics during pregnancy from included articles related to maternal adverse events (AE), pregnancy outcomes, birth defects, and other neonatal AEs.

Results: Of 13,052 articles identified, 67 studies and 96 case reports were included. Among included studies, a total of 27,894 prenatal exposures to antibiotics of interest were identified: amikacin (n=5), chloramphenicol (n=530), doxycycline (n=2,348), gentamicin (n=308), streptomycin (n=226), sulfadiazine (n=860), TMP-SMX (n=23,579), and tobramycin (n=38). No articles were identified for plazomicin. One population-based case-control study found doxycycline to be associated with an elevated risk for spontaneous abortion (odds ratio [OR] 2.81, 95% confidence interval [CI] 1.93–4.10); another study found an elevated risk of cardiovascular malformations with prenatal doxycycline exposure (OR 2.38, 95% CI 1.21–4.67). Hearing or vestibular deficits were reported in 18/120 (15%) children and 17/109 (16%) pregnant women following prenatal streptomycin exposure across four cohort studies. First trimester exposure to TMP-SMX was associated with increased risk of neural tube defects based on three population-based case-control studies (pooled OR 2.46, 95% CI 1.4–4.3), one of which found an elevated risk among women without folic acid supplementation (OR 13.3, 95% CI 2.9–61.4). No statistically significant association with birth defects or neonatal AEs was found for amikacin, chloramphenicol, gentamicin, sulfadiazine, or tobramycin prenatal exposures among articles included. Based on limited data from the included articles, amikacin, chloramphenicol, gentamicin, streptomycin, sulfadiazine, TMP-SMX, and tobramycin cross the placenta; no primary data were found in the included articles on placental transfer of doxycycline or plazomicin.

Conclusions: Safety data on prenatal exposure to antibiotics considered for PEP and treatment of plague are limited. Despite limited data, the literature reveals potential safety concerns with prenatal exposure to doxycycline, streptomycin, and TMP-SMX; whereas the safety profiles for amikacin, chloramphenicol, gentamicin, sulfadiazine, and tobramycin may be more favorable, although data were more limited for these antibiotics.

Quality and Safety

479-Improving Safety Culture Awareness and Accountability to Decrease Pharmacy Quality-Related Events. Beaudrie-Nunn A, Shelledy K, Shelledy S, The University of Arizona College of Pharmacy. Email: beaudrienunn@pharmacy.arizona.edu.

Objective: To measure a change in data-entry errors by standardizing quality-related event tracking and to assess pharmacy staff attitudes regarding error management and patient safety culture. Errors are a natural byproduct of human performance. Thus, there are limitations to an error prevention-centered model. Quality related-events occurring during data-entry were identified by the pharmacy's Quality Council as a key area impacting internal quality and external patient safety. A collaborative approach to reduce errors may allow staff to learn from mistakes and meet quality goals.

Methods: This project was approved by the institutional review board (IRB) as quality improvement. A baseline measurement of the monthly quality-related events was collected via pharmacist hand-written tallies and analyzed as percent error per chance of error for data-entry. Monthly event rates were measured for January through March. Data analysis was performed using a chi-square test with a-priori alpha level of 0.05. The Agency for Healthcare Research and Quality (AHRQ) Community Pharmacy Survey was administered to obtain employee perceptions of their pharmacy patient safety culture. Surveys included thirty-six items measuring eleven composites of patient safety culture. Structured interviews were conducted to assess the attitudes of pharmacy staff concerning data-entry

quality. Interviews consisted of eight open-ended questions with a goal of identifying processes requiring attention. Interventions included implementing an electronic error reporting form to standardize tracking of quality-related events and recommendations for targeted coaching strategies to address specific events.

Final Results: Monthly quality-related event rates significantly increased from 0.3395 percent in January to 0.43 percent in February (p less than 0.001), and significantly decreased from February to 0.3326 percent in March (p less than 0.001). The initial increase from January to February was accounted for by pharmacy staff members in training and enhanced focus on identifying events. Overall, January through March saw a significant reduction of events (p less than 0.001). Twenty-four of the thirty-six employees completed the AHRQ survey and twenty-five employees participated in structured interviews. Survey results indicate staff has a desire to improve data-entry quality and feels the pharmacy has a strong patient safety culture, with an overall rating of "Excellent." Training, diligence, communication, standardization, positive feedback, and taking an active role in patient safety were themes identified during the interviews. Recommendations to initiate one-on-one coaching and positive incentives for quality goals were provided to pharmacy management as future projects, in addition to a comprehensive report compiling survey and structured interview results.

Conclusions: Standardized quality-related event tracking may assist in identifying and correcting knowledge gaps in the data-entry process. AHRQ Community Pharmacy Surveys and structured interviews were helpful in assessing the attitudes of pharmacy staff regarding error management and patient safety culture and may be useful in identifying educational opportunities for continued quality improvement.

480-Impact of a Community Pharmacy System Redesign on Reducing Over-the-Counter Medication Misuse in Older Adults. Chui M, Gilson A, Stone J, Morris A, Xiong K, Walbrandt Pigarelli D, Breslow R, University of Wisconsin -Madison School of Pharmacy, Brown R, University of Wisconsin -Madison School of Nursing, Holden R, Center for Aging Research, Regenstrief Institute and Indiana University School of Medicine, Indianapolis, Indiana, Jacobson N, Institute for Clinical and Translational Research, Community Academic Partnerships Program, University of Wisconsin-Madison, Albert S, University of Pittsburgh, Phelan C, Center for Nursing Research and Practice, Aurora Sinai Hospital. Email: michelle.chui@wisc.edu.

Objective: This study was designed to examine the effectiveness of an innovative pharmacy design change on the misuse of over-the-counter (OTC) medications in older adults (ages ≥65). More than half of older adults taking OTC medications are not using those medications safely. Of the estimated 2.2 million older adults at risk for a major adverse drug event, a majority involve an OTC medication. Few interventions have attempted to decrease misuse of high-risk OTC medications in older adults, and none have addressed system barriers. To meet this need, participatory design and human factors engineering were used to redesign a structural layout of the pharmacy (the Senior Section) to increase awareness of higher-risk OTC medications, and promote interactions between pharmacy staff and older adults to reduce potential misuse. The Senior Section contains OTC medications (for pain, cough/cold, allergy, sleep) and is proximal to the prescription department to facilitate pharmacy staff/patient engagement.

Methods: A pre-/post-implementation design was used for 87 older adults recruited from three pharmacies within a pharmacy organization. Older adults were recruited and asked to select an OTC medication based on a hypothetical scenario that applied to them. The selected OTC was then compared to their self-reported medication list and health conditions, and the patient's reported use was compared to the product labeling for the selected OTC. Three misuse outcomes were operationalized: (1) Drug/Drug Misuse, (2) Drug/Disease Misuse, and (3) Drug/Label Misuse using the subcategories of exceeding Daily-Dosage, Single-Dosage, Timing/Frequency, Use Duration, and Inappropriate Indication. Patient characteristics were collected, and logistic regression determined similarity of patient characteristics at pre-/post-implementation. These variables were then compiled into a propensity-score matching regression model to estimate their combined effects on the Senior Section's association with various misuse types.

Final Results: No patient characteristic varied statistically between pre-/post-implementation. Once these characteristics were entered into a propensity-score matching model, instances of Drug/Disease Misuse significantly lessened over time ($z=-2.09$, $p=0.037$). Alternatively, the Senior Section intervention did not significantly change Drug/Drug Misuse, although there were fewer instances at post-implementation. For Drug/Label Misuse, the Senior Section's influence varied according to the sub-type, with Daily-Dosage ($z=-2.42$, $p=0.016$) and Single-Dosage ($z=-5.82$, $p=0.001$) achieving significant reductions; however, Timing/Frequency misuse did become more frequent at post-implementation ($z=2.16$, $p=0.031$).

Conclusions/Implications: Results suggest that simple but well-conceived redesign of the OTC aisles in a community pharmacy can reduce older adult OTC medication misuse. This intervention, if up-scaled in pharmacy corporations, would create new permanent structures and processes that could immediately change the quality/availability of information for older adults as they approach the OTC aisles. Such information could lead to greater risk awareness, and help older adults more easily determine if that risk pertains to their own health situation and select safer OTC medications with confidence. Further research must evaluate the generalizability/sustainability of post-implementation improvements in different pharmacy environments. Physically redesigning OTC aisles may also be tested in different populations, such as pediatric patients. Taken together, these nascent outcomes support the Senior Section as a valuable tool for pharmacy staff to improve patients' safe OTC medication use.

481-High rates of Statin Discontinuation and new Antipsychotic use after an Acute Hospital Stay Vary by Hospital. Coe A, Department of Clinical Pharmacy, University of Michigan College of Pharmacy, Vincent B, Center for Clinical Management Research, Veterans Affairs Ann Arbor Healthcare System, Iwashyna T, Department of Internal Medicine and Institute for Healthcare Policy and

Innovation, University of Michigan, Ann Arbor, MI. Email: tonicoe@med.umich.edu.

Objective: To examine the extent of statin medication discontinuation and new antipsychotic medication use after hospital discharge. Medication problems are a significant concern in the care transition after hospital admissions, particularly those including an intensive care unit (ICU) stay with and without sepsis diagnosis. Medications started in the hospital during critical illness may be inadvertently continued, such as antipsychotics, leading to potential harm and unnecessary costs. The discontinuation of chronic medications, such as statin cholesterol medications, increases risk of emergency department visits, hospitalizations, or death.

Methods: The study design was a retrospective cohort study conducted in the Veterans Affairs (VA) healthcare system. Included participants were veterans with an inpatient hospitalization from January 1, 2014-December 31, 2016, survived at least 180 days post-discharge, and received at least one medication through the VA outpatient pharmacy within one year around admission were included. Hospitalizations were grouped into: 1) direct admission to the intensive care unit (ICU) and a diagnosis of sepsis, 2) direct admission to the ICU without sepsis diagnosis, and 3) no ICU stay during the hospitalization. The main outcome measures were chronic statin medication discontinuation at six months and new antipsychotic use at one-year post-hospital discharge. Patient-level covariates included were age, race, and sex, Van Walraven's Elixhauser comorbidity score, top 10 most frequent admitting diagnoses, and illness severity. Hospital level covariates were: hospital region, size, complexity level, and whether it was a teaching hospital. Descriptive statistics were used to describe the patient and hospital level characteristics in the three primary exposure groups for both the statin medication discontinuation and new antipsychotic use cohorts. Chi-square analysis separately examined differences in the proportion of new antipsychotic use and statin discontinuation. Multilevel logistic models with hospitalizations nested within hospitals were used to estimate the risk-and reliability-adjusted rates of statin discontinuation and new antipsychotic use. The median odds ratio (MOR) was used to quantify the variation between hospitals. Correlation analysis compared statin discontinuation with new antipsychotic use at the hospital level. SAS version 9.4 (SAS Institute Inc., Cary, NC) was used for data analysis. This study was approved by the Ann Arbor VA Institutional Review Board.

Results: A total of 266,372 participants were included in the statin medication and 923,776 in the antipsychotic medication cohorts. Statin discontinuation ranged from 29-35% and new antipsychotic prescription fills from 3-5%, with highest rates in the ICU admission and sepsis diagnosis group. Statin discontinuation and new antipsychotic use after a hospitalization varied by hospital, with worse performing hospitals having 17% higher odds of discontinuing a statin (median odds ratio at hospital-level, adjusted for patient differences, aMOR: 1.17 (95% CI: 1.14, 1.20)) and 29% higher odds of new antipsychotic use (aMOR, 1.29 (95% CI: 1.24, 1.34)). Risk-adjusted hospital rates of these two medication changes were correlated at 0.23, p=0.02.

Conclusions: Systemic variation in the rates of statin medication continuation and new antipsychotic use were found. Systemic solutions (e.g. medication reviews for appropriateness and optimization of therapy) may be warranted.

483-Antipsychotic Monitoring and Management in Pediatric Patients: A Pharmacist-Driven Population Health Model. Culp M, McCauley M, Nationwide Children's Hospital, Groves B, Ramtekkar U, Nationwide Children's Hospital/Partners for Kids. Email: mary.culp@nationwidechildrens.org.

Objective: The primary objective of this study is to identify the opportunity for improving adherence to existing guidelines of metabolic monitoring for children on atypical antipsychotic agents. The secondary objective is to assess the impact of a pharmacist-driven intervention on monitoring of atypical antipsychotic therapy in pediatric patients. Antipsychotic medications are approved for the treatment of few mental health conditions in pediatrics including schizophrenia, bipolar I disorder, irritability with autistic disorder, and Tourette's disorder. The rate of outpatient antipsychotic prescribing in pediatrics in the United States increased nearly five-fold between 1995 and 2002 with approximately 32% prescribed by non-mental health providers. The most common diagnoses associated with antipsychotic prescribing are attention-deficit/hyperactivity disorder (ADHD) or conduct disorder and affective disorders, such as bipolar disorder and depression. This dramatic increase in prescribing corresponds with the introduction of second generation or "atypical" antipsychotic medications, which are associated with fewer extrapyramidal symptoms than first generation antipsychotics. However, atypical antipsychotic agents have serious metabolic side effects including weight gain, hyperglycemia, dyslipidemia, and hyperprolactinemia. These side effects are of particular concern in children because they can predict adult obesity, diabetes mellitus, metabolic syndrome, and cardiovascular morbidity. Despite increasing awareness, current literature suggests the rate of recommended antipsychotic monitoring is inconsistent in pediatric populations with only 31.6% and 13.4% of atypical antipsychotic-treated children receiving glucose and lipid testing, respectively. Additionally, the National Committee for Quality Assurance (NCQA) released Healthcare Effectiveness Data and Information Set (HEDIS) measures that focus on the safe and judicious use of antipsychotic agents in children and adolescents, with emphasis on metabolic monitoring.

Methods: Using a population health management approach, a report will be generated for a specific outpatient clinic at a pediatric academic medical center to identify patients based upon the inclusion criteria below. A pharmacist review of the electronic medical record will be completed for identified patients who are actively prescribed an antipsychotic agent to ensure the American Diabetes Association joint consensus and American Academy of Child and Adolescent Psychiatry guideline-recommended monitoring parameters have been obtained. Patients will be included if they are between the ages of 1 and 17 years, had a previous outpatient clinic visit within the past 12 months, and have been actively prescribed one or more atypical antipsychotics or a combination of typical and atypical antipsychotics within the past 12 months. Monitoring or management recommendations will be communicated via electronic medical record using a standardized message to the prescriber, who can accept or decline the pharmacist

recommendation. The impact of the pharmacist-driven intervention will be assessed by obtaining the number of patients prescribed antipsychotics who had appropriate monitoring parameters obtained pre-and post-intervention. This study will also assess the number of pharmacist management recommendations that were suggested and then subsequently accepted or denied by the prescriber. Descriptive statistics will be used to analyze and summarize the data.

Preliminary/Final Results: Research in Progress.

Conclusions/Implications: Research in Progress. Future directions of this study include follow-up assessment for changes in associated clinical outcomes (e.g., lipid or glucose levels) after pharmacist intervention.

484-Implementation of a Compatible eCare Plan Platform. Fan R, Boscobel Pharmacy. Email: fan.ry@husky.neu.edu.

Objective: The primary objective of this project is to determine the success of implementing an eCare plan capable platform into daily workflow at Boscobel Pharmacy.

Methods: The Conceptual Model of Implementation Research will be used to determine the success of eCare plan implementation and documentation into the pharmacy workflow. As part of this quality improvement project, four pharmacists will be trained to use the QS1 eCare plan platform and will complete documentation of select patient encounters including antibiotic therapy callbacks, new medication callbacks, medication synchronizations, medication discontinuations, and over-the-counter product recommendations. The implementation outcomes of adoption, acceptability, appropriateness, and feasibility will be systematically evaluated. Adoption, or the decision to trial the new system, will be measured by the decision to implement and consideration of the characteristics of the various eCare plan capable platforms to facilitate documentation. Acceptability, or satisfaction with the eCare plan documentation process, will be measured through a survey for pharmacists related to ease of creating the eCare plans and general satisfaction with the documentation process. Appropriateness, or the fit of the documentation process into the workflow, will also be evaluated via the pharmacist survey. Feasibility, or everyday suitability of the eCare plan documentation, will be assessed by the proportion of eCare plans documents out of the available opportunities for documentation, the potential reasons for missed eCare plan documentation, as well as general barriers and facilitators to the documentation process. Informal qualitative interviews will be conducted as needed for clarification on the pharmacist survey. A qualitative thematic analysis will be completed on the survey and interview results to determine implementation success.

Results: The adoption of eCare Plans into Boscobel Pharmacy workflow was determined due to the inclusion of Boscobel Pharmacy in the Community Pharmacy Enhanced Services Network (CPESN) and the network's requirement for all CPESN community pharmacies to utilize eCare Plans. QS1 was chosen as the most appropriate platform to utilize for documenting eCare plans since the software is already being used in daily workflow, does not require any additional costs for eCare plan documentation, and is continuously being updated with additional features that improve the usability of the platform. As this project is in progress, results for the remaining implementation outcomes will be presented at the APhA Annual Meeting.

Implications: eCare Plans allow pharmacists to document their clinical care and exchange information across different healthcare providers through a standardized, interoperable document. The successful implementation of eCare Plans will provide Boscobel Pharmacy with additional resources for documenting patient encounters and interventions as well as providing a greater emphasis on the follow-up and monitoring of their patients' medication therapies.

486-Impact of Community-based Pharmacist Intervention on Initial Opioid Prescribing. Kinney O, McDermott J, The Kroger Co., Hincapie A, Heaton P, University of Cincinnati College of Medicine. Email: olivia.kinney@kroger.com.

Objective: This research is a progression of "Trends in adverse event reporting received though social media," a 2017 review analyzing adverse events (AEs) retrieved from social media over a 10-year period from 01 January 2007 to 30 June 2017. The review highlighted the growing utilization of social media outlets for consumer reported AEs.1 The aim of the current review is to further evaluate reporting trends by categorizing consumer demographics and product types amongst social media platforms to identify technology implementation opportunities (i.e. chat bots) to facilitate safety data collection.

Methods: The 2017 review analyzed the global safety databases of a single marketing authorization holder (MAH) to review AEs retrieved from social media platforms including Facebook®, Instagram®, and Twitter®. A total of 312,173 individual case safety reports (ICSRs) comprising of 777,415 AEs were reported over the 10-year period. Products involved included over-the-counter (OTC) drugs and cosmetics. The current research will utilize software packages such as R and Python to analyze the existing data for trends in reporting. Parameters that will be evaluated include age, gender, and product specificity against the social media platform where the AE was reported. A manual analysis of ICSRs will be conducted to determine which social media platform the AE was reported on.

Results: In progress.

Conclusion: In Progress.

487-Demystifying Bradykinin Mediated Reactions of Angiotensin Converting Enzyme inhibitors in Patients Receiving Therapeutic Plasma Exchange. Lee J, Bahjri K, Loma Linda University School of Pharmacy, Abdi Pour A, Loma Linda University School of Medicine, Nabavi S, California State University Los Angeles. Email: joannalee@llu.edu.

Objective: Angiotensin-converting enzyme (ACE) inhibitors are frequently used antihypertensive medication that is proven to have

additional advantages such as reducing proteinuria, cardiovascular events, and all-cause mortality. However, ACE inhibitors are suggested to be held at least 24 hours before the Therapeutic Plasma Exchange (TPE) to reduce the risk of anaphylactoid reactions. This might be true for membrane-based systems but not clear if this applies to centrifuge based systems. The objective of this study was to determine if use of the ACE inhibitor increases the risk of anaphylactoid reactions in patients who receive TPE using a centrifuge based machine.

Methods: This is a retrospective cohort study of Loma Linda University Health (LLUH) patients who received TPE from 1/2014 to 1/2019 based on ICD 9/10 codes for the TPE. Inclusion criteria include: age of ≥ 18 and received TPE treatment. Pregnant patients were excluded. Demographic data, types of replacement fluid [fresh frozen plasma (FFP) vs. albumin vs. FFP+albumin] for TPE, anaphylactoid reaction, and ACE inhibitor use (1. Patient on ACE inhibitors and continued before treatment; 2. Patient on ACE inhibitors but held 24 hours before the treatment; 3. Patient never on ACE inhibitors; and 4. Patient never on ACE inhibitors but was added later were collected). Binary logistic regression was used to analyze the association of ACE inhibitor use and anaphylactoid reaction after adjusting for type of fluid replacement that were used.

Results: Total of 252 treatments were identified including patients who received multiple treatments. The mean age is 46±17 years old and 132 treatments (52%) were male patients. Patients' race include: Caucasian (41%), Hispanic (33%), African American (16%), Asian (5%) and others (5%). Majority of patients used albumin as a replacement fluid (79%) during TPE. Anaphylactoid reactions treated with normal saline, antihistamine, steroid and other treatments occurred in 28 treatments (11.1%). This include itchiness/rash, flushing, hypotension and tachycardia. Only 31% were on ACE inhibitor and continued at the time of TPE and 15% held ACE inhibitors before the treatment. No significant association of ACE inhibitor use and anaphylactoid reactions were shown after adjusting for the type of fluid replacement (odds ratio = 1.5, 95% confidence interval: 0.6-3.7).

Conclusions/Implications: Hypotension and itchiness/rash were common symptoms of anaphylactoid reactions who received TPE. Our results suggest that risk of anaphylactoid reactions in patients receiving TPE is not associated with ACE inhibitor use.

488-Detecting potential medication selection errors during e-prescription processing with the RxNorm Application Programming Interface. Lester C, University of Michigan, Tu L, University of Michigan, Electrical Engineering and Computer Science, Ding Y, University of Michigan, College of Pharmacy, Flynn A, University of Michigan, School of Medicine, Department of Learning Health Sciences. Email: lesterca@umich.edu.

Objective: Medication errors are pervasive. One way to avert them is to limit transcribing of prescription information. Electronic prescriptions (e-prescriptions) convey secure and computer-readable prescription information from clinics to outpatient pharmacies for dispensing. Pharmacy staff then select the corresponding medication needed to fulfill e-prescriptions within their dispensing software by comparing against the medication on the e-prescription verify. A pharmacist manually double-checks the medication product between the e-prescription and dispensing record. While this approach largely prevents wrong medication selection errors, opportunities still exist for these errors because of variable medication naming systems, software design, and interoperability challenges. Leveraging existing technology to improve medication selection accuracy in outpatient pharmacies supports the larger goal of making the United States health care system safer. OBJECTIVE The objective of this study was to design and test a prototype system for detecting medication selection errors made during e-prescription processing at outpatient pharmacies with the RxNorm Application Programming Interface (API).

Methods We conducted a retrospective analysis of 537,710 pairs of e-prescription and dispensing records from a mail-order pharmacy for the period 01/20/17-10/31/2018. National drug codes (NDC) for each pair were submitted to the National Library of Medicine's (NLM) RxNorm API and the API returned Rx concept unique identifier (RxCUI) semantic clinical drug (SCD) codes associated with each NDC. The SCD identifiers for e-prescription NDCs were matched against the corresponding SCD identifiers for the pharmacy dispensing record NDCs. An error matrix, based on hand-labeling all mismatched SCD pairs, determined performance metrics, including sensitivity, specificity, positive predictive value, false-positive rate, and precision for the RxCUI SCD matching algorithm for both total pairs and unique pairs of NDCs in these data.

Results We analyzed 527,009 e-prescription and pharmacy dispensing record pairs. Nearly all of the NDC pairs had matching RxCUIs (99.896% -99.681%). However, four clinically significant cases of mismatched RxCUI SCD were detected. This included 3 different medications (e.g., e-prescription = oxcarbazepine 300 MG Oral Tablet, dispensing record = lamotrigine 25 MG Oral Tablet) and 1 different strength. There were 548 other less significant cases of mismatched RxCUIs were found (e.g., e-prescription = testosterone cypionate 200 MG/ML Injectable Solution, dispensing record = 1 ML testosterone cypionate 200 MG/ML Injection. Using the RxNorm API to match RxCUI SCD for e-prescription-dispensing-record NDC pairs, we obtained a sensitivity of 1, a false-positive rate of 0.00104 to 0.00319, specificity of 0.99896 to 0.99681, and precision of 0.00725 to 0.04167.

Conclusions The NLM's RxNorm API can perform an independent and automatic double-check of correct medication selection during e-prescription verification at outpatient pharmacies. RxNorm has near comprehensive coverage of prescribed medications and can be a tool to prevent medication selection errors in today's healthcare environment. Pharmacies can adopt the existing technology of the RxNorm API and use it to monitor for medication selection errors in existing pharmacy dispensing processes. Using these kinds of independent, computerized double-check systems can support pharmacist work and may eliminate the need for an additional human review of the e-prescription transcription process.

489-Emergency Department Visits due to Monoclonal Antibody Adverse Events—United States, 2004–2017. Lind J, Budnitz D, Centers for Disease Control and Prevention, Moro R, Northrop Grumman, Weidle N, Eagle Global Scientific, LLC. Email: vox2@cdc.gov.

Objective: To estimate the number of emergency department visits due to monoclonal antibody adverse events in the United States by patient characteristics and active ingredient.

Methods: Public health surveillance data from the National Electronic Injury Surveillance System-Cooperative Adverse Drug Event Surveillance project were analyzed. National estimates and 95% confidence intervals (CIs) of emergency department visits and subsequent hospitalizations were calculated. Annual national estimates were calculated by dividing the period estimates by the number of years in the period.

Results: Based on 676 cases, the annual estimated numbers of emergency department visits due to monoclonal antibody adverse events increased 7-fold from 2004–2006 (662; 95% CI=298, 1,026) to 2015–2017 (4,765; 95% CI=2,846, 6,684). There was a total of 34,777 (95% CI= 22,829, 46,724) estimated emergency department visits from 2004–2017 and over one-fourth (27.8%; 95% CI=19.9%, 35.7%) of the visits resulted in hospitalization. Most (69.5%; 95% CI=63.6%, 75.5%) monoclonal antibody adverse event visits involved adults aged ≥40 years, and 67.7% (95% CI=61.5%, 73.8%) involved females. Most visits (87.4%; 95% CI=81.8%, 93.1%) only involved a single monoclonal antibody and were not co-implicated with other products (i.e., prescription and over-the-counter medications, dietary supplements, homeopathic products, or vaccines). The five most frequently implicated monoclonal antibodies in emergency department visits were infliximab (26.4%; 95% CI=21.0%, 31.8%), rituximab (19.3%; 95% CI=15.0%, 23.5%), adalimumab (15.9%; 95% CI=10.5%, 21.3%), bevacizumab (7.0%; 95% CI=4.1%, 9.9%), and cetuximab (6.2%; 95% CI=2.9%, 9.5%).

Implications/Conclusions: The number of monoclonal antibodies available has increased substantially in recent years. However, nationally representative data on monoclonal antibody adverse events in clinical practice have not been available. With a marked increase in the number of emergency department visits due to monoclonal antibody adverse events over the last 14 years, further characterization of adverse events from specific monoclonal antibodies and calculation of adverse event rates can help guide clinicians in assessing risks versus benefits when prescribing monoclonal antibodies.

490-Reduction of Inappropriate Antibiotic Use in Patients with Acute Bronchitis at Family Medicine Clinic. Massey S, University of Minnesota College of Pharmacy Ambulatory Care Residency Program, Pereira C, University of Minnesota College of Pharmacy and Smiley's Family Medicine Clinic. Email: smassey@umn.edu.

Objective: Relevance/Originality Every year, over 47 million outpatient antibiotics are inappropriately prescribed across the nation, 34 million of which are indicated for respiratory infections. While the implementation of antibiotic stewardship services has been a large focus in the inpatient setting, outpatient implementation of these services has lagged behind and has far fewer specific examples in the literature. This quality improvement project was designed to explore Antibiotic prescribing habits in a family medicine clinic to identify areas for impactful change relating to inappropriate antibiotic usage. Objectives of project the objective of this quality improvement project was to reduce inappropriate antibiotic prescribing in a family medicine clinic. The goal of the project was to decrease the number of antibiotics prescribed for acute bronchitis in patients aged 18 to 75 years old by 25% by 5/15/2019.

Methods: There were four plan-do-study-act (pdsa) cycles within this quality improvement project. First, a pre-intervention survey was distributed to providers to assess attitudes and insights regarding antibiotic prescribing using a mix of likert scales and multiple choice responses. The second cycle was conducted to identify the rate of antibiotics proscribed when diagnosed with acute bronchitis. This was done through chart review. The third cycle included a second dataset, which examined the frequency of prescribing azithromycin at the clinic. Diagnosis codes were reviewed to determine indications for azithromycin prescriptions. Finally, a post-intervention survey was distributed to providers utilizing similar questions from the pre-survey to measure the change of attitudes and insights of antibiotic use after the interventions. Alongside the four pdsa cycles, two interventions were conducted 1) presentation to providers and 2) patient education handouts. results Nineteen providers participated in the Pre-intervention survey. A baseline of individual antibiotic prescribing habits, attitude of antibiotic use, and desired resources were obtained. Overall, providers identified the growing need for a decrease in prescribing habits. The first chart review of data spanning over two years found 167 patients were diagnosed with bronchitis. Of the 60 charts reviewed, only three were diagnosed with bronchitis within the clinic. This lead to an educational session on acute bronchitis for providers. Through the presentation, it was discovered providers avoided the diagnosis of bronchitis and instead favored diagnosis of viral infection, upper respiratory infection, or cough. Due to the low number of bronchitis cases captured in the first data collection, a second data set was useD to identify azithromycin prescriptions prescribed in the clinic during the two-year period. Of 627 identified prescriptions, 257 prescriptions were associated with an included respiratory diagnosis code (46 different diagnosed conditions). Patient handouts were provided during clinic huddles for one month, which were used by 15% of participating providers during patient encounters. A total of 19 providers participated in the post-survey. Based on the post-intervention survey results, prescribing habits did not change within the clinic between the pre-intervention and post-intervention surveys (within the last six months providers prescribed the same amount of prescriptions based on their survey responses), but providers were satisfied with the interventions and felt interventions were beneficial.

Implications/Adaptability: Overall, antibiotic use is a growing problem and there has been little movement in addressing antibiotic use in the outpatient setting when compared to the inpatient setting. Based on the measure found through chart review of those treated for bronchitis, 95% OF patients WHO received antibiotic prescriptions were in the Urgent Care / Emergency Room setting

compared to 5% IN THE outpatient clinic. In the family medicine clinic, the data suggests a trend known as diagnostic shifting. Diagnostic shifting is the practice of diagnosing a condition with a similar condition to justify prescribing a specific medication. This trend can be seen in the results where 257 of 627 azithromycin prescriptions were associated with 46 different respiratory diagnosis codes, many of which reflected symptoms of acute bronchitis. Ongoing research and quality improvement should be conducted in a variety of outpatient settings to help diminish antibiotic overprescribing. Moving forward, potential creation and use of policies and procedures surrounding antibiotic use could be beneficial in the outpatient setting. Another option to consider is physician peer review of prescribing habits. In the future, pharmacists should explore ways to conduct week-long PDSA cycles to better identify the use of antibiotics. While challenging, rapid response may be needed to change prescribing habits.

491-Providing Practical Monitoring Training for Investigator-Initiated Clinical Trials. Pacifici E, Pire-Smerkanich N, University of Southern California School of Pharmacy, Chandramohan A, Kaur S, Southern California Clinical and Translational Science Institute. Email: epacific@usc.edu.

Objective: The research goal was to understand the effectiveness of a novel clinical trial educational module designed and disseminated by the Southern California Clinical and Translational Science Institute (SC CTSI) to increase the quality of investigator-initiated clinical trials conducted in academia. Background: A self-study training module on clinical trial was created to inform clinical research professionals (CRPs) about quality management systems (QMSs) in clinical trials (CTs) and to provide them with practical approaches to monitoring. A comparison between pre-and post-survey questionnaires indicated a 70% growth in learning comprehension across users, illustrating the effectiveness of the module. To date, the online module has been viewed by over 270 users globally.

Methods: Utilizing an implementation science framework, the training module followed sequential stages of implementation and is currently in the last stage (full implementation). To expand its reach, the module was publicized through various platforms including several email campaigns and on-site presentations. User uptake analysis was conducted one day and one week after each event using the Remote Learner Database. To test the effectiveness of the module in a real-world scenario, SC CTSI started a pilot initiative whereby clinical research coordinators (CRCs) are trained to provide objective oversight (monitoring) of ongoing clinical trials they are not directly coordinating. Follow-up surveys of CRCs will examine the effectiveness of the training and the results of monitoring will shed light on the quality issues present in investigator-initiated studies.

Results: Presently, the training module has been launched on the USC Regulatory Science website since November 2018. Methods of promulgation were quantified based on growth of usership. Our results showed that email campaigns led to more sustained user uptake, while in-person presentations led to more immediate user uptake. As dissemination efforts continued, our findings were used to develop a short document to capture which methods were most effective in promulgating the module. Now, other researchers looking to spread their training resources will have an effective guide. Regarding the pilot initiative, data is being collected and findings will be reported.

Conclusions: The creation of a free training tool in the form of a self-study module allows for the integration of quality control functions in resource limited environments. If the current pilot initiative is successful, the model could be expanded to other academic institutions to establish QMSs to ensure data integrity and subject protection.

492-Rate of Near Misses Identified by Pharmacy Technicians Performing Product Verification Compared to Pharmacists in a National Grocery Chain Pharmacy. Page A, Nadpara P, Goode J, Virginia Commonwealth University, Harrison A, Fountain M, The Kroger Co.. Email: apage5@vcu.edu.

Objective: Technician product verification (TPV) is an emerging pharmacy practice model that utilizes appropriately trained pharmacy technicians to verify prescription products. The Institute of Safe Medication Practices (ISMP) defines a “near miss” as an error that happened but did not reach the patient. There are no studies that have evaluated the rates of near misses by technicians compared to pharmacists, which could identify areas of workflow improvement to increase patient safety. Objectives The primary objective is to compare the rate of near misses identified by pharmacy technicians compared to the number of near misses identified by pharmacists during product verification. The secondary objective is to compare the accuracy of technician product verification to the accuracy of pharmacist product verification.

Methods: This retrospective analysis of a TPV quality improvement project includes eleven pharmacies of the same national grocery chain in Tennessee. As part of the project, pharmacists and technicians performing verification duties will be instructed to report near misses identified at the verification step of the prescription verification process from October 7 to December 31, 2019. A conference call and written instruction was used to train the pharmacists and technicians. Types of near miss errors that will be identified include wrong drug, dose, dosage form or formulation, quantity and cap type (child-proof vs. easy-off). Near miss errors identified will be reported using a reporting sheet that includes medication name and strength, type of error identified, identifiers job title (technician vs. pharmacist), name of associate responsible for dispensing the medication and a brief description of the near miss. At the end of the quality improvement project, reporting sheets will be collected and the rates of near misses identified by pharmacists and technicians will be compared. Prescriptions that are filled incorrectly and leave the pharmacy will be reported and tracked by incident reports. An incident report will be filed for any prescription that leaves the pharmacy with one or more errors defined above. Incident reports will be reviewed post data collection and the rate of errors by pharmacists compared to technicians will be compared. A

prescription that was transcribed incorrectly, not corrected in pre-verification by a pharmacist and dispensed incorrectly per the original prescription will not be considered an incorrect fill for the purposes of this study. Rates of near misses identified by technicians and pharmacists and the accuracy of verified prescriptions by technicians and pharmacists will be compared and analyzed using multivariate and bivariate statistics.

Results: Research in progress.

Implications/Conclusions: Knowledge of near miss errors that are identified before reaching the patient enables pharmacy practice sites to continually improve their workflow and processes to minimize errors. Accuracy of technicians performing verification duties may be comparable to that of pharmacists and maybe an opportunity for delegating to appropriately trained technicians.

493-Topiramate and Phentermine Combination Therapy: Safety and Monitoring Practices at a Federally Qualified Health Center. Shahdoost Moghadam S, Kennedy W, El Rio Health, Kennedy A, University of Arizona/ El Rio Health. Email: ssmoghadam@pharmacy.arizona.edu.

Objective: Obesity is a global epidemic and complex health issue that results in severe health complications. Several medications have been developed to help individuals lose weight, among them, Qsymia®(phentermine/topiramate). Qsymia is the only weight loss medication currently under a Food and Drug Administration (FDA) Risk Evaluation and Mitigation Strategy (REMS) program. At this time, pharmacies at this Federally Qualified Health Center (FQHC) do not participate in the dispensing of Qsymia. Qsymia is not a drug in the FQHC's formulary. Therefore, separate prescriptions for topiramate and phentermine are provided to patients who want to lose weight and are appropriate candidates for this therapy. Since the main components of Qsymia are being dispensed, it would be best practice to follow as close as possible the FDA guidelines provided through the Qsymia REMS program. While safety is the main concern when using these medications, there are other factors that need to be considered that may affect weight loss, such as other prescribed medications to control comorbid conditions like diabetes, dyslipidemia, and hypertension, and lifestyle modifications. The study will evaluate contraceptive use and pregnancy testing in females of childbearing age using topiramate and phentermine, incidence of pregnancy in females of childbearing age while using these medications, and use of these medications when contraindicated, such as in patients with a diagnosis of glaucoma, hyperthyroidism, MAO therapy, or pregnancy. Additionally, efficacy will be assessed by looking at weight loss from baseline and at 12 and 26 weeks of treatment while also looking at involvement in health programs.

Methods: The study will be conducted, with IRB approval, at El Rio Health. Patient records will be reviewed, and data collection will be limited to El Rio patients seen by an El Rio provider between January 2016 to September 2019. Patients who concomitantly use phentermine and topiramate will be pulled from the database. Only patients who have used the combination therapy for > 2 weeks will be included. Participants will be excluded if they are < 18 years old or do not fill medications at El Rio pharmacies. Patient factors including age, gender, race/ethnicity, presence of comorbidities (diabetes, hypertension, dyslipidemia, glaucoma, hyperthyroidism), surgeries (hysterectomy, tubal ligation), weights, and pregnancy will be collected.

Preliminary/Final Results: Currently undergoing IRB review process.

Conclusions/Implications: In an effort to assess phentermine and topiramate use as well as patient safety, it is the purpose of this study to assess adherence of El Rio providers to key counseling points and prescribing practices recommended by the Qsymia REMS program. The study's intent is to identify gaps in safe prescribing and dispensing of these medications in order to ensure patient safety and adequate training of all parties involved in patient care.

494-Evaluation of Temperature Variations During U.S. Mail Delivery As Compared to USP <659> Storage Recommendations. Vyas L, Kim J, Toscani M, Barone J, Volino L, Ernest Mario School of Pharmacy. Email: lakhini.vyas@rutgers.edu.

Objective: The purpose of this study is to evaluate the impact of mail shipping on potential excursions to the recommended storage temperatures of non-specialty oral medications. With the expansion of mail order pharmacy services, such as Express Scripts and Amazon's PillPack, more medications are transported via mail carrier services than ever before. While there are temperature control standards for medication transport among manufacturers, wholesalers, and pharmacies, there are no standards for monitoring temperature during the transit of mailed medication packages from pharmacies to patients and among patients. Most oral medications are recommended to be stored at controlled room temperature (68-77 degrees Fahrenheit according to United States Pharmacopeia [USP] Chapter <659>). Temperature excursions outside of this recommended range may potentially impact the integrity of medications during transit. Currently, there are no data available on the impact of common carrier methods on package temperature changes.

Methods: This prospective pilot study will involve the tracking of temperatures during mail transit among California, New Jersey, and Tennessee. Packages containing Testo 184-T3 temperature data loggers will be sent using popular delivery methods (Overnight, Two-Day, and Ground shipping) by common mail carriers (United States Postal Service [USPS], FedEx, and United Parcel Service [UPS]). Delivery routes will include New Jersey to California to Tennessee to New Jersey based on institutional affiliations and climate differences. Three packages will be mailed per delivery method for each carrier (e.g. overnight shipping: 3 USPS, 3 FedEx, and 3 UPS) to account for potential variability. Temperature readings will be recorded at 1-minute intervals and will be remotely stored by data loggers during transit. The data will be downloaded from the USB-compatible data logger at the completion of each multi-state trip

and analyzed using Testo Comsoft Professional Pro software with data archiving. Minimum and maximum temperature extremes will be identified. Descriptive statistics will be used to assess the temperature and duration of time spent outside of the USP recommended range and will be stratified by delivery method.

Results: Research in progress.

Conclusions: Preliminary data trend toward potential temperature excursions outside of the USP recommended range during transit.

Reimbursement

495-Comparison of the National Average Drug Acquisition Cost and the Average Manufacturer Price for Drugs Dispensed by Community Pharmacy. Banh N, Seoane-Vazquez E, Chapman University School of Pharmacy. Email: nbanh@chapman.edu.

Objective: Generic drugs represent 90% of the outpatient prescriptions dispensed in the US. Studies assessing manufacturer prices and pharmacy acquisition costs for drugs dispensed by community pharmacy in the US are scarce. The objectives of this study was to compare the National Average Drug Acquisition Cost (NADAC) and the Average Manufacturer Price (AMP) for multiple source brand and generic drugs in the US.

Methods: AMP and NADAC data from September 2018 to August 2019 were collected from the Centers for Medicare and Medicaid Services (CMS). Regulatory information was collected from the FDA Approved Drug Products with Therapeutic Equivalence Evaluations (Orange Book). We calculated the AMP as a percentage of NADAC (AMP/NADAC) for each drug. The difference between the NADAC and the AMP represents the rebates and other discounts that are received by PBMs and other managed care organizations, insurers and payers. Descriptive statistics, 95% confidence intervals (CI) and t-test were performed for the analysis. Regression analysis was conducted to assess the effect of the number of companies marketing a drug and the type of drug (brand, authorized generic, generic) on the AMP/NADAC.

Results: CMS listed 357 brands, 21 authorized generics and 2,925 generics with NADAC and AMP information. Brand drugs had an average ± standard deviation AMP/NADAC of 13.8%±17.6% (95%CI 12.0%-15.6%; median 6.2%), authorized generics 22.8%±27.2% (95%CI 11.1%-34.4%; median 13.3%) and generic drugs 78.4%±124.5% (95%CI 73.9%-82.9%; median 51.8%). Differences among the AMP/NADAC for the 3 types of drug classes were statistically significant ($p<0.0001$). The number of companies marketing a drug and classification as a generic drug were positivity associated with the AMP/NADAC ($p<0.0001$), however the regression only explained 6.6% of the variation of the AMP/NADAC.

Conclusions: The analysis of the difference between the NADAC and the AMP revealed that the pharmacy acquisition cost was closer to the manufacturer price for generic than for multisource brand name drugs. An important part of community pharmacy payment for drugs to manufacturers is converted to rebates and other discounts to PBMs and other managed care organizations, insurers and payers. The amount of rebates and other discounts was significantly higher for multisource brands and authorized generics than for generic drugs.

496-Improving the Health of South Dakotans through the Prevention and Management of Diabetes and Cardiovascular Disease: A Landscape Analysis-The Payer Perspective. Pinto S, Hulterstrum E, Middendorf A, South Dakota State University, Hawkins-Taylor C, Xavier University. Email: sharrel.pinto@sdstate.edu.

Objective: The objective of this 5-year project is to develop sustainable and financially viable statewide programs that expand on the role of the pharmacist to impact prevention and management of diabetes and cardiovascular disease (CVD) across the state of South Dakota. This component of the overall analysis specifically focused on the role of payers to facilitate communication, billing, and reimbursement. Managing chronic conditions effectively has shown to decrease healthcare costs for both patients and payers. While seeking to further improve patients' access to healthcare and pharmacy-based disease management services, understanding the payers' viewpoint is critical, as without the support and reimbursement from payers, even the best services will not be accessible and beneficial to patients.

Methods: Third-party payers, self-insured employers, and other groups that help facilitate communication or billing and reimbursement related to health care services were identified through web searches and outreach through practitioner referral. Administrators and other key decision makers of these organizations were recruited and scheduled to participate in 1-1.5-hour elicitation interviews via video-call using zoom. These sessions were recorded, transcribed, and analyzed. Descriptive statistics were obtained for this group and the transcripts were coded and thematically analyzed with traditional qualitative analysis methods using NVivo.

Results: Representatives of two health plans of a large regional Integrated Delivery Network (IDN) participated. Health plans offer employer assisted programs to employees across the state, preventative services for chronic conditions, and supplemental insurance for Medicare beneficiaries. The key themes identified were education, communication, and holistic wellness. Participants expressed the need for more education on various topics, including medication therapy management (MTM), coding/billing practices, and how pharmacists fit into the patient's healthcare journey. Participants also identified communication barriers between practitioners, payers, and patients that have led to inconsistencies in how patients are treated. For instance, patients failed to receive timely care because either they or their practitioner were unaware of the services/medications covered by their plans as currently there are not

any effective pathways to identify this information in real-time. In regard to holistic wellness, participants recognized that pharmacists are in a unique position to treat patients in a holistic way. While participants do not currently provide MTM services or reimbursement to their providers to offer this care to covered patients, they expressed interest for more education, including webinars and policies, in order to implement an effective MTM reimbursement model.

Implications/Conclusions: Including payers in the conversation about provision of healthcare services is critical for ensuring future success and long term sustainability of healthcare programs. Conversations with the participants in this group, while small, provided a needed and valuable perspective. A resounding message about confusion around MTM services and how those services would be reimbursed brings forth the necessity of targeted education for beneficiaries of health plans, practitioners, and other employees of the health system. Engaging with additional payer groups will be key to achieving the goal of providing better holistic care for patients with diabetes and CVD in the state of South Dakota.

Respiratory Care

497-Evaluation of the Impact of Pharmacist Services on the Asthma Medication Ratio in a Community Pharmacy Setting. Brown K, Goedken A, Veach S, University of Iowa College of Pharmacy, Shen R, North Liberty Pharmacy, Witry M, University of Iowa. Email: katarina-brown@uiowa.edu.

Objective: A ratio of asthma controller medication to total asthma medications has been shown to be a predictor of asthma-related patient outcomes, emergency department visits, and hospitalizations. Those with an asthma medication ratio of 0.5 or less have been identified as high risk. Overuse of short acting β2-adrenergic agonist (SABA) inhalers is also associated with increased risk of exacerbations in addition to higher total and asthma-related healthcare costs. It is unknown if pharmacist interventions provided to patients with asthma can impact a patient's asthma medication ratio.The objectives of this innovative practice project are to: 1) Implement a pharmacist-delivered service addressing barriers to optimal asthma medication use; 2) Measure the change in asthma medication ratio before and after pharmacist implemented services; 3) Identify reasons for under-utilization of controller asthma inhalers and reasons for over-utilization of short acting relief inhalers; and 4) Evaluate appropriateness of asthma medication regimen based on 2019 Global Initiative for Asthma (GINA) guidelines.

Methods: This innovative practice project will be conducted in a single-site community pharmacy in the Midwest. Patients targeted in this project will be 18 years and older, have persistent asthma, taking at least one prescription controller medication for asthma and included in a private insurance value-based pharmacy program. Patients will be excluded if they have had a diagnosis of chronic obstructive pulmonary disease, emphysema, obstructive chronic bronchitis, chronic respiratory conditions due to fumes/vapors, cystic fibrosis, or acute respiratory failure. Patient demographics to be recorded include age, gender, asthma medications, and if there has been an exacerbation leading to an emergency room visit or hospitalization in the past year. A pharmacist will administer a modified Drug Adherence Workup (DRAW) tool either face-to-face or telephonically to all enrolled patients which will assess barriers to appropriate medication use. A pharmacist will then use the modified DRAW tool responses to customize services for each patient. Service options include counseling, educational materials, assessment of inhaler technique, cost saving measures, contacting prescribers regarding therapy changes or other services as indicated. Modified DRAW tool responses, service types and any drug therapy problems identified will be documented. Additionally, any identified reasons for under-utilization of controller asthma inhalers and over-utilization of short acting relief inhalers will be categorized and documented. Ninety days following the provision of services, each patient's asthma medication ratio will be recalculated and the change in asthma medication ratio will be evaluated. The percentage of patients at or above an asthma medication ratio of 0.5 both before and after pharmacist provided service will be reported. Descriptive statistics will also be used to report reasons for over and under-use of inhalers, interventions made to align patient asthma therapy with guideline-recommended treatment and prescriber responses.

Results: Research in progress.

Conclusions: Research in progress.

498-Montelukast Inappropriate Dosing and Risk for Asthma Exacerbations. Schipper D, Landawee A, Deshpande M, Southern Illinois University Edwardsville. Email: dschipp@siue.edu.

Objective: To 1. Assess the appropriateness of montelukast dosing based on age; and 2. Identify if montelukast dosing is related to asthma exacerbations.

Methods: The study utilized data from the household and prescription medication components of the 2014-2016 Medical Expenditure Panel Survey. Inclusion criteria were participants aged 12 months to 18 years who had self-reported asthma and reported filling a prescription for montelukast during the period studied. Other variables included race/ethnicity, poverty level, prescription insurance status, asthma attack in the last 12 months, rescue inhaler use in the last 3 months, and additional inhaled corticosteroid use for asthma control. Descriptive statistics were used to assess sample characteristics. Chi-square test was used to assess the difference in asthma exacerbations based on montelukast dosing. Appropriate survey weights were used to account for the complex survey design.

Results: The preliminary sample consisted of 210 eligible participants (Weighted: 548,472) aged 12 months to 18 years, mostly male (64.5%) and white (47.3%). Approximately 35% were middle income families and 48.4% reported having prescription insurance. A majority of the participants (77%) were found to be on the age-appropriate dose of montelukast. About 43% of participants had

reported having an asthma attack in the previous 12 months and 56.4% had used a rescue inhaler in the previous 3 months. Approximately 50% of participants on montelukast were also prescribed an inhaled corticosteroid. Among those who used rescue inhalers in the previous 3 months, 71% were on the age-appropriate dose of montelukast and 29% were on inappropriate dose of montelukast (p=0.025). Among those who had an asthma attack in the last 12 months, 72% were on the age-appropriate dose of montelukast and 28% were on inappropriate dose of montelukast (p=0.153).

Conclusion: Pharmacists should be aware of current montelukast dosing guidelines in order to make recommendations for age-appropriate dosing of patients treating persistent asthma.

4**99-Community Pharmacy Asthma Specialized Service: Barrier identification and intervention at an outpatient pharmacy.** Smith M, Babul N, University of Illinois at Chicago, Djuric Kachlic M, University of Illinois at Chicag. Email: msmith80@uic.edu.

Objective: This project aims to determine the impact of providing more comprehensive community pharmacy-based asthma services which identifies patient barriers to control. Secondary outcomes will include assessing knowledge gained from participating in the service. Background: Asthma is a common medical condition that effects an estimated 300 million people and causes 346,000 deaths worldwide every year. Although pharmacists are well positioned to identify, educate, monitor, and refer asthma patients with sub-optimal control, most pharmacist-patient interactions for asthma management are brief and focused on inhaler counseling. Studies of rates of medication use suggest that long-term rates of adherence to preventive therapies among adult patients are often poor due to unidentified barriers. Pharmacists are in a key position to help identify barriers to long-term adherence in order to help patients improve their asthma control.

Methods: The principal investigator will recruit adult asthma patients who receive care at the health system and fill prescriptions for asthma medications at one of the health system's outpatient pharmacies for an asthma management consultation session. This session with a community pharmacist will use strategies for barrier identification to provide more effective asthma management. An adapted version of the Adherence Starts with Knowledge questionnaire that has been modified to be specific for patients with asthma will be used to identify barriers. Interventions will be made based on the barriers identified and coordinate with an educational handout which will be provided to patients. All interventions will follow the scope of normal practice. If necessary, referrals to a primary care provider or pulmonologist will also be made. A pre-survey assessing patient's asthma control, self-assessment of knowledge level, and barriers to adherence will be administered. After the consultation session, a post-survey will be administered to assess the knowledge gained from the service. Four weeks after the consultation session, a survey assessing the patient's asthma control and self-assessment of knowledge level will be re-administered over the phone and an additional post-survey will be administered over the phone to assess what recommendations discussed during the visit were implemented, and what knowledge was retained.

Results: Research in progress. We hypothesize that patients' Asthma Control Test scores will increase from baseline over the course of this project, indicating an improvement in asthma control and quality of life. Additionally, we hypothesize that changes in the other survey results will show improvement in patients' understanding of and management of asthma over the course of the project.

Conclusions/Implications: This project's results may demonstrate that a comprehensive community pharmacy-based service such as this can improve patients' management of asthma. Such results would support an expanded role for community pharmacists in the management of asthma.

500-Pharmacist-led ICS De-escalation in Non-Asthmatic Adults with COPD in a Primary Care Setting. Varughese S, Valentino A, The Ohio State University College of Pharmacy/PrimaryOne Health, Williams S, Pharmacogenetics Center of Excellence, Faiella A, Whitner J, PrimaryOne Health. Email: varughese.13@osu.edu.

Objective: Current Global Initiative for Obstructive Lung Disease (GOLD) treatment guidelines of Chronic Obstructive Pulmonary Disease (COPD) recommend for the de-escalation of inhaled corticosteroids (ICS) in certain patient populations. De-escalation of ICS therapy can be based on eosinophil counts, history of pneumonia, inappropriate original indication, or lack of response to ICS. The primary objectives of this study are to assess the number of recommendations made by the pharmacist and accepted by primary care providers (PCPs) for an eosinophil count lab test and medication changes based upon eosinophil counts. Secondary objectives include the rate of patients on appropriate medication regimens pre and post-pharmacist intervention, and the number of non-medication related pharmacist interventions made and accepted by PCPs and patients.

Methods: This prospective study will involve data collection pre and post-intervention and has been approved by the Institutional Review Board (IRB) at The Ohio State University. Retrospective chart reviews will be conducted for patients meeting inclusion criteria who were seen by their PCP for COPD between January 1, 2019 to August 31, 2019. Inclusion criteria consists of patients 18 years and older, diagnosed with COPD, have no current or previous asthma medical history, and have a prescription for ICS mono or combination therapy. If there is no documented eosinophil blood count, a research team member will contact the patient's PCP to recommend the test and a referral to the pharmacist COPD management program. If eosinophil blood count is on file and <100 cells/microliter, the research team member will notify the patient's PCP to place a referral for pharmacist COPD management. If the PCP agrees with the referral, a pharmacist on the team will schedule the appointment to assess if de-escalation of ICS therapy based on the 2019 COPD guidelines is appropriate. If eosinophil blood count is >100 cells/microliter, no further assessment will be needed. Informed consent will be obtained from patients who present to the pharmacist visit. Descriptive statistics will be used to analyze

collected data, which will include recommendations for medication changes and non-pharmacological management and their acceptance.

Preliminary Results: Results will include the number of recommendations offered and accepted for eosinophil blood counts, referrals for pharmacist COPD management, medication changes recommended and accepted based on eosinophil counts and pharmacist visits, and non-pharmacological recommendations such as referrals for smoking cessation, vaccinations, and spirometry offered and accepted.

Conclusions/Implications: This study will evaluate the impact of pharmacist-led de-escalation of ICS therapy based on 2019 GOLD COPD treatment guidelines. De-escalation of ICS therapy for patients who are likely not benefitting from it can lead to improved patient adherence with other therapies, cost savings to the patient and the health care system, and prevention of unnecessary adverse events such as oral candidiasis, hoarse voice, and pneumonia. This study will also demonstrate if proactive pharmacist interventions impact the uptake of new guideline recommendations for COPD management.

Specialty Pharmacy, Substance Abuse and Addictions

501-Prescription Opioid Misuse Among Adolescents: Preferences for Educational Interventions. Abraham O, Szela L, University of Wisconsin-Madison School of Pharmacy. Email: olufunmilola.abraham@wisc.edu.

Objective: Although opioid use and misuse are prevalent among adolescents, they are frequently overlooked in opioid medication safety research. Studies often examine adult populations without considering adolescents' awareness and preferences for education. In addition, there is a lack of evidence regarding the efficacy and success of educational interventions targeting adolescents. This study aimed to explore adolescents' awareness about prescription opioids misuse and their preferences for medication safety education.

Methods: Adolescents were recruited from three high schools in the Midwest region in May 2019 to participate in focus groups about prescription opioid safety. A focus group guide was developed and pilot tested for content and clarity by the research team. Focus groups were designed to elicit information about prescription opioids, prescription opioid safety, and preferred methods for opioid safety medication education. Demographic information was collected, including age, gender, race and ethnicity. Each focus group included five to eight students and was facilitated by two members of the study team. Focus groups lasted for approximately 4 to -60 minutes, were audio-recorded, and professionally transcribed. Transcriptions were content and thematically analyzed using NVivo 12 qualitative data software by four members of the study team.

Results: A total of 54 high school students (59% female, 44% white, 44% Hispanic or Latino) participated in eight focus groups. Participants ranged from age 14 to 18 and grades 9 to 12. Four themes emerged: 1) perceptions and prevalence of prescription opioid misuse, 2) reasons and consequences of misuse, 3) sources of medication information and misconceptions, and 4) educational preferences for prescription opioid safety. Adolescents perceived that opioid misuse was prevalent in varying degrees based on location and personal experiences. Examples of opioid misuse were sharing medications with family members and inappropriate disposal and storage. Participants reported that stress, peer or family influence, recreational use, pain, and addiction were common reasons for adolescent opioid misuse. Common consequences of opioid misuse stated by study participants were physical and mental health consequences, addiction, overdose, death, damaged relationships, changes in personality, decline in school or work performance, and poor decision-making. Adolescents relied on television shows, family, personal experiences, healthcare professionals, medication leaflets and pamphlets, online websites, and peers as sources of medication information. However, they had misconceptions of the definition and examples of prescription opioids. Most participants identified prescription opioids as pain relieving medications. Adolescents preferred engaging and brief sessions for opioid safety education using speakers, videos, and small group discussions of personal experiences of opioid misuse and preventing negative consequences. Participants preferred using an educational digital game versus learning through lectures and recommended using incentives and mandatory sessions to encourage participation.

Conclusion: Adolescents were aware of opioid misuse among their population, and common practices were sharing medications and inappropriate disposal and storage. Misuse of prescription opioids may lead to negative physical, mental, and social consequences. Adolescents seek medication information from a variety of sources, particularly online websites. Adolescents should be educated about prescription opioid safety through engaging, brief, and mandatory learning sessions that incorporate incentives and personal experiences of misuse.

502-Medication Assisted Treatment and Addiction Replacement Amongst Opioid-Dependent Adults. Adams C, Family Health Pharmacy, Draime J, Cedarville University, Hatic A, Barhorst R, Family Health Services. Email: carly.adams1994@gmail.com.

Objective: Medication-assisted treatment or therapy (MAT) is a term used to describe the use of medications and behavioral therapies to help individuals with substance use disorder. Opioid addiction and resulting overdose deaths have become a significant public health concern. However, as addiction to opioids is addressed, professionals are concerned about the unintended effect of addiction replacement. This phenomenon occurs when a new addiction takes the place of previously addictive behavior to produce the same feeling or high. Addictions can easily be transferred from one substance or habit to another. This is because individuals who have an addiction are not only craving a physical substance, they are fulfilling an emotional need. Research has shown that over 65 percent of persons with addiction issues struggle with multiple addictions, and often replace one addiction with another. While

research has shown that MAT is effective at reducing opioid overdose deaths and increasing compliance with substance use disorder (SUD) psychosocial treatment, little is known about whether or not these individuals, once opioid-free, turn to other substances, illicit or otherwise. To combat these growing numbers, MAT programs have been increasing and have shown effectiveness in opiate abuse disorders. The purpose of this study is to review patients that are a part of Family Health Service's MAT Program and determine if they were able to successfully maintain abstinence from opioids. In addition, this study aims to review what percentage of patients remained using other substances concurrently or turned to other substances of abuse after successfully discontinuing the use of opioids. Lastly, we will examine the difference in success rates with buprenorphine versus vivitrol.

Methods: This study uses a retrospective cross-sectional design of a convenient sample of individuals that have received MAT treatment to address addiction to opioids. Sample will include individuals who used MAT services between 2015 and September 2019. Subjects must be 18 years of age or older with no preference for gender. The study entails using de-identified treatment records of persons on MAT. Variables of interest will include: self-report of recent drug use, current withdrawal symptoms, patient report of drug cravings (on a scale of 1 to 10), previous treatment for addiction, pre-existing self-reported psychiatric conditions, social support system, reason patient is motivated to abstain from drugs, patient's goals, what kind of counseling he/she plans on or is attending, labs routinely ordered at the first visit: urine drug screen and urine pregnancy test (if female and not permanently sterile), COWS scale (clinical opiate withdrawal scale), and whether they are court-ordered to the program. Records will be analyzed using descriptive and inferential statistics.

Preliminary Results: In progress, approximately 250 patients will be included.

Implications/Conclusions This study can serve as a model for other current or future MAT programs and give health professionals more insight into patients. The information gathered should help opioid improvement efforts and allow healthcare professionals to better assist their patients struggling with substance use disorder and/or addiction replacement. This study is currently in process and therefore no conclusions have been drawn.

503-Community-Based Naloxone Access Education by Pharmacy Students and Effect on Attitudes and Naloxone Dispensing. Block A, Siegel E, The Ohio State University College of Pharmacy. Email: block.126@osu.edu.

Objective: To implement naloxone-access education programs and connect community members to naloxone by 1) Identifying and surveying pharmacies that provide naloxone and analyzing dispensing habits, 2) Collaborating with community organizations to provide education to the public in order to improve attitudes toward naloxone, and 3) Referring individuals to increase access to naloxone.

Background & **Methods:** Opioid overdose continues to be a problem in Ohio and across the nation. Unintended overdose is the leading cause of accidental death in Ohio, with drug overdose accounting for half of all accidental deaths in 2017. While many Ohioans acknowledge the problem, few understand their role in addressing the epidemic. Additionally, stigma surrounding addiction and overdose may limit citizen action in these public health issues. To encourage community involvement, this project was designed to facilitate discussion and promote access and awareness of the life-saving opioid overdose reversal drug, naloxone. While several local programs successfully provide naloxone kits to interested parties at little to no cost, the population of those who access these services is relatively narrow, mostly covering active users of illicit intravenous drugs. Seeking to broaden the population of naloxone carriers, this project targets family and friends of active drug users, people in recovery who may be at risk for relapse, and community members in heavily affected neighborhoods. To collect data, a survey of community pharmacies surrounding the heavily affected Franklinton neighborhood, an urban locale with low socioeconomic status, was conducted. This showed that naloxone utilization was low relative to overdose frequency. Educational programming is being provided by two student pharmacists to community members that includes where and how to obtain naloxone, where to dispose of unused prescription opioids, and overdose risk factors and warning signs. Following implementation of these programs in community centers, support groups, detention centers, festivals, and other community gathering events, attitudes towards naloxone and likelihood of obtaining naloxone kits is being measured with pre- and post-education paper surveys. A follow-up in-person survey of area pharmacies will be conducted at the conclusion of the program to evaluate dispensing habits to approximate utilization changes. Descriptive data will be reported, including frequencies and percentages.

Results: Upon pre-program survey, 11 of 15 pharmacies surveyed had a protocol in place to dispense naloxone in the Franklinton area. The average number of naloxone kits dispensed via pharmacist-physician protocol before program implementation was 2.5/month, and the average number dispensed via written prescription was 5.33/month. Data collection to address pharmacy dispensing habits after project implementation is in progress. Data collection regarding attitudes towards naloxone and likelihood of obtaining naloxone kits following program implementation is also in progress.

Future Implications: Results of this project will showcase strategies pharmacists and students can implement and outcomes related to enhancing naloxone and addiction resources within local communities.

504-Nicotine Replacement Therapy (NRT) Treatment or Assisted Taper plus Behavioral Support for Electronic Nicotine Delivery Systems (ENDS) Cessation. Blower N, Sahr M, Kelsh S, Weaver P, Sohn M, Ferris State University. Email: blowern@ferris.edu.

Objective: While the use of Electronic Nicotine Delivery Systems (ENDS) has been on the rise in recent years, there is a clear gap in

knowledge relating to cessation of ENDS use. The purpose of this study was to develop and evaluate the success of ENDS cessation protocols administered by pharmacists. The primary objective of this study was to assess the proportion of participants who self-report vaping and nicotine cessation within 12 weeks. The study determined the quit rates of vapers using self-guided quitting versus nicotine vape taper versus nicotine replacement therapy (NRT).

Methods: The study design was a prospective, 3-armed, parallel group using block randomization and rolling enrollment. The 3 study arms included a self-guided arm (control group), a vape taper group, and a NRT group. The control group was simply instructed to quit within 12 weeks and was free to use their available resources in any way. The vape taper group used their own device and vape liquid, but were provided with a recommended tapering schedule and behavioral support from the research team. The NRT group was provided with 7mg, 14mg, or 21mg nicotine patches and/or 2mg or 4mg nicotine gum/lozenges based on their current modified Fagerstrom score and personal preferences. The NRT group also received behavioral support from the research team. The NRT group participants were instructed to completely quit vaping when they began using NRT. All participants were additionally referred to the Michigan toll free quit helpline for additional 24 hour support. Data collection was performed 8 times over the course of the 12-week study period. Participants were asked similar questions at the initial appointment, 4 week appointment, 8 week appointment, and 12 week appointment. Participants were also called at 3-7 days, 2 weeks, 6 weeks, and 10 weeks for data collection and behavioral support, if applicable. Frequencies and descriptive statistics were conducted on demographics, tobacco use, and quit-method perceptions. Relative effectiveness of the three arms was measured by comparing the patient outcomes of successful vape and nicotine cessation. Exclusion criteria included individuals who were under the age of 18, were pregnant or planning to become pregnant, had a heart attack or stroke in the last 2 weeks, had poorly controlled COPD or asthma, were prisoners, were non-English speakers, or had impaired cognition or decision-making capacity.

Results: Enrollment for the study is currently ongoing. Preliminary results have found 75% (3 of 4) of participants were able to quit vaping and nicotine product use within 12 weeks. The 1 participant that was not successful was lost to follow-up at the 2 week call. Of the participants who have completed the 12-week program, 2 were randomized to a pharmacist-assisted vape taper with behavioral support, 1 was randomized to NRT plus behavioral support (lost to follow-up), and 1 was randomized to self-guided attempt (control). Nine other participants are currently enrolled.

Implications, **and Conclusions**: Implications and conclusions will be presented in March 2020 after data collection is completed. Results of this pilot study will be used for future research.

505-Applicability of a new Specialty Pharmacy-Reported Measure Describing Completion of Therapy for Hepatitis C. Bolduc C, Stickney K, Gelinas A, Levesque E, Apothecary By Design Specialty Pharmacy, McCall K, University of New England. Email: Clay.Bolduc@CVSHealth.com.

Objective: Hepatitis C Virus is a chronic and complex disease state with highly successful medications when taken appropriately. Specialty pharmacies serve patients with complex disease states such as HCV who require higher pharmacy care. To maintain accreditation, specialty pharmacies are required to report on certain measures. New to these measures for 2019 was the measurement of completion of therapy for HCV when treated with direct acting antiviral (DAA) therapy. The objective of this study is to calculate hepatitis C (HCV) completion of DAA therapy according to an accrediting body's definitions and compare it to a calculation with additional pharmacy proposed adjustments to assess its applicability to practice.

Methods: This retrospective, cohort study has been approved by the Institutional Review Board. All patients with prescription data claims at a specialty pharmacy who had a first fill for a DAA medication between the two measurement periods of 1/1/18-12/31/18 and 1/1/19-12/31/19 will be included. Further information will be collected via a manual retrospective chart review and from a report generated by the pharmacy's electronic medication record system. Data collected will include: DAA medication, fill dates, age, presence of cirrhosis, and HCV genotype. Presence of > 15 day cumulative gap is mandated by the accrediting body's definition and will be calculated two ways to allow for comparison. The first cumulative gap will be calculated by taking the number of days between the last day's supply of one prescription claim for the prescribed DAA and the subsequent claim will be summed. The pharmacy proposed cumulative gap will be calculated based off of information about the patient's actual start date documented in the pharmacy chart notes. Additionally, completion of therapy over the duration of therapy according to accreditation definitions versus duration of therapy per practice guidelines will be compared. All data will be de-identified by assigning a random unique number to each patient before analysis takes place. Data will be analyzed using R version 3.6.1.

Implications/Conclusions: The results of this research could provide beneficial feedback for the accrediting body, which may consider adjusting its definition of completion of therapy to more accurately represent real world practice. In addition, data collection may identify patient populations that are less likely to complete treatment and require additional interventions for optimal adherence.

506-Community Pharmacist Integration into Contingency Management and Education for Opioid Exposed Patients. Dragatsi E, Dragatsi & Co.. Email: Elizabeth.Dragatsi@dragatsi.com.

Objective: This project sets out to position pharmacists to address the opioid epidemic, which remains a crisis despite the plethora of public and privately funded programs. As one of the most accessible healthcare professionals, community and ambulatory care pharmacists are highly qualified to participate in a novel team-based approach to: assist and coach patients; participate in contingency management (a type of behavioral therapy in which individuals are 'reinforced', or rewarded, for evidence of positive behavioral

change); while using non-prescription multi-modal options, as a new intervention. The aims of this project are to: 1) Assess pharmacist and patient/consumer knowledge of opioid contingency management and their satisfaction with an educational intervention; 2) Educate community/ambulatory care pharmacists to assist patients in recovery from Substance Use Disorder (SUD) using Medication Assisted Therapy (MAT); 3) Create educational interventions regarding multi-modal options for patients to address pain/cravings from opioid deficit, post-surgically, in chronic pain or SUD; by providing integrated drug-supplement-herbal interaction review, over-the-counter (OTC) recommendations, appropriate choice of supplements and dietary/snack options, which may be readily available in the pharmacy.

Methods: 1. Use baseline patient/consumer and pharmacist knowledge surveys to identify content for an educational intervention, consisting of a working toolkit that contains the following: evidence-based OTC interventions for patients taking prescribed opioids, printed continuing pharmacy education (CPE) materials, patient/consumer and pharmacist surveys with referenced answer keys, bag stuffers (educational leaflets), and educational wall calendars. 2. Maintain consistent messaging from the clinic to the pharmacy as pharmacists and pharmacy technicians provide prescription services, perform dose/lot number audits, and celebrate tapering milestones during the patient's recovery journey. 3. Educate pharmacists and pharmacy staff on promoting a stigma-free care environment using person-centered language. 4. Conduct post-intervention knowledge/satisfaction surveys for pharmacists and patients/consumers.

Preliminary Results: In baseline knowledge surveys, patients (n=123) and pharmacists (n=22) were asked 10 and 15 questions, respectively. On average, patients correctly answered 51.6% of questions, and pharmacists 54.7%. Topics that were answered incorrectly most often were incorporated into educational interventions. These included iron/magnesium/nutritional status, allergy/histamine release, sleep quality/gastrointestinal health, smoking, concentrated sugar intake, and adverse drug-supplement-herbal interactions. The first post-intervention survey followed a CPE presentation, "Words MATter, Self Care MATters, Pharmacists Providing Care MATters!", (Maine Pharmacy Association Spring Convention, 3/31/19, Bangor, Maine). After the presentation, 48 pharmacists scored 100% on the 4-question post-test assessing stigma, and 3 topic areas of greatest need identified from baseline surveys: turmeric, magnesium/iron, allergy/histamine release. A second post-intervention knowledge survey is in progress following a recently released 3-hour ACPE accredited home study activity. Follow-up patient/consumer satisfaction results (n=36) showed 69% of respondents found the educational interventions highly favorable with particular interest in sleep, vitamin, and sugar relationships to pain control.

Implications/Conclusions: Pharmacists are strategically positioned to provide care for patients taking opioids, minimizing exposure, or recovering from opioid use disorder. When educated about addressing patient factors that readily play into the burden of reducing opioid use, while aligning with a behavioral healthcare plan that includes contingency management, this leads to a new and exciting area of pharmacy practice.

507-Pharmacists' role in Addressing the Opioid Crisis: Best Practices for Providing Naltrexone Injections. Ford J, Gilson A, Skemp-Brown M, Mott D, UW Madison School of Pharmacy, Augustine C, Bryan G, UW Madison School of Nursing. Email: jhfordii@wisc.edu.

Objective: This study was designed to examine process-related facilitators and barriers to pharmacists providing injection naltrexone treatment (INT) for opioid use disorder (OUD) in Wisconsin. Adverse events (e.g., overdose and death) are prevalent for people with OUD, but lack of access to effective INT characterize many communities, especially rural communities. Although healthcare practitioners (e.g., physicians and nurse practitioners) can prescribe INT for OUD, most choose not to provide this service. However, Wisconsin pharmacists are legally permitted to provide non-vaccination injections. The prevalence of pharmacies represents an alternative and more accessible INT resource, but their involvement is emergent and inconsistent. To promote pharmacists' roles in safe and effective INT, it is important to conceptualize Best Practices characteristics to aid pharmacists considering becoming healthcare partners in INT. Two specific aims guided this study: (1) identify factors that pharmacists consider for adopting INT and (2) for pharmacists already providing INT, identifying the needs and expectations for initiating and implementing these services.

Methods: This study utilized a mixed methods approach consisting of a pharmacist survey and semi-structured interviews of practicing pharmacists. Invitations to complete an electronic (RedCAP) survey were sent to all pharmacies operating in the 33 counties/tribal nations relevant to this project. Reminder notifications were sent 2 and 4 weeks later. IBM SPSS v.25 was used to compute descriptive statistics. One team member also completed a 45-to 60-minute semi-structured, audio-recorded interview with nine pharmacists providing INT, which were then transcribed. A deductive and iterative content analysis approach was used to identify and explore process themes in the interview data. Process themes determined a priori included: Professional networking activities, workflow changes, benefits/drawbacks, referral relationships, activities before/during/after patient arrives for INT, ideas for Best Practices, and advice to interested pharmacies.

Final Results: More than two-thirds of the 68 reporting pharmacists (71%) do not practice in a pharmacy that provides INT. Pharmacists (n=20) offering INT provided 400 injections in the past year. Of the numerous reasons for not providing this service, the most prevalent were lacking knowledge about using telemedicine (16%) and insufficient reimbursement for drug administration/testing (16%). Qualitative findings from the pharmacist interviews identified process steps (e.g., urine drug screen, patient consent), confirmed that personal prescriber communication is key to building referrals, framed recommendations for Best Practices guiding pharmacists' role in INT, and revealed that patients are returning to the pharmacy for follow-up injections. Implications/Conclusions: Although limited, the survey and interview results allow understanding of pharmacy-provided INT for OUD,

as well as indicate benefits/drawbacks to offering INT services. The lower-than-expected survey response rate suggests that practicing pharmacists either do not engage in the relevant activities or they simply are unaware of the activities involved. Clearly there is an untapped interest, as well as resources, in realizing pharmacists' roles in INT, one that can be promoted through focused educational efforts and facilitating collaborative engagements with prescribers and referring agencies. Taken together, these nascent outcomes can inform the development of Best Practices recommendations to guide increased educational interventions for proliferating pharmacists' participation in INT.

508-Analysis of Prior Authorization Success and Timeliness at a Community-Based Specialty Care Pharmacy. Hecht B, Frye C, Holland W, Realo Discount Drug, Realo Specialty Care, Holland C, Realo Discount Drug, Rhodes L, Marciniak M, UNC Eshelman School of Pharmacy. Email: bhecht@realodiscountdrug.com.

Objective: Specialty pharmacy is projected to be a $500 billion industry and increase the current cost of drug spending by 50% by the year 2020. Specialty medications often require a prior authorization for insurance coverage of medication therapy due to their high cost. Turnaround time for prior authorization varies due to detailed criteria that must be met by the insurance plan, complexity of the request, and volume of received requests. Provider offices prescribing specialty medications can become encumbered with the time and staffing resources needed to effectively manage prior authorizations. Therefore, some offices outsource the prior authorization process to the dispensing pharmacy to aid in completing tasks on behalf of mutual patients. Pharmacies that are proficient in these tasks have the opportunity to improve patient access to healthcare, and assist partnered providers. Skilled navigation of prior authorizations may increase patient access to medication. The objective of this study is to evaluate the time to first prior authorization decision (either approval or denial) for dermatological medications dispensed by the specialty pharmacy.

Methods: The study is a retrospective evaluation of prior authorization data for dermatological prescriptions at a specialty pharmacy in eastern North Carolina. Data will be extracted from the pharmacy's dispensing system. Data will be included for all patients with a dermatological prescription with a specialty care task date from January 1, 2017 to June 30, 2019. Data to be evaluated includes: patient age (18 years or older) and gender, medical condition, medication name, prior authorization initiation date, prior authorization decision status (completed, appealed, denied), approval date, time to approval/denial, prescription fill date, time to fill date, notes regarding barriers to approval, reasons for denial, person conducting prior authorization process (pharmacy vs. provider office), and number of medication refills. The time to first prior authorization decision is the amount of time, in days, from receipt of the prescription until an approval or denial is recorded. Time to first fill is calculated from the intake date of the prescription to the fill date of the prescription. Appeal success rate will be reported as the percentage of appeals that gained approval out of the total number of appeals, which were done in the research period. Approval to denial ratio will be represented as the number of appeals approved for every one denial. Data evaluated will be compared to a local dermatology office that completes their own prior authorizations. Descriptive statistics will be used to evaluate the data.

Preliminary Results: Institutional Review Board approval is anticipated in October 2019. Data will be analyzed in January and February 2020.

Conclusion/Implications: The analysis of prior authorization timeliness and success will allow the pharmacy to quantify the utility of their services to the provider offices. Additionally, the pharmacy can determine its effectiveness at providing patients with prompt access to their medications. The data obtained in this study could help pharmacists justify these services to providers of any background who need help with prior authorizations.

509-Enhancing Naloxone Services Implementation Using an Educational Webinar: A Randomized, Controlled Trial in Alabama. Hohmann L, Fox B, Garza K, Westrick S, Auburn University Harrison School of Pharmacy, Wang C, Auburn University College of Education, Scott D, Auburn University, Student Counseling & Psychological Services, Correia C, Auburn University College of Liberal Arts, Department of Psychology, Curran G, University of Arkansas for Medical Sciences. Email: 510-The Effect of a Slow Titration of Dimethyl Fumarate on Patient Adherence and Tolerability. Lezina D, University of Southern California / Keck Medicine of USC Specialty Pharmacy. Email: LAH0036@auburn.edu.

Objective: Given the continued problem of prescription drug misuse and high number of opioid-related deaths annually in the United States, pharmacists can play a critical role by increasing patient access to naloxone. However, pharmacists still miss opportunities to dispense naloxone. Therefore, the Empowering Community Pharmacists program was created to enhance Alabama community pharmacists' ability to implement naloxone services. This live webinar program incorporates training on naloxone administration techniques, practical implementation strategies, and communication strategies. The purpose of this study was to assess the impact of the Empowering Community Pharmacists program on community pharmacists' naloxone services structure and process activity implementation, as well as number of naloxone prescriptions dispensed.

Methods: Community pharmacists in 20 Alabama counties with the highest opioid overdose death rates were invited to participate in a 2-group pragmatic randomized controlled trial using a multi-modal recruitment method and randomized to a control (no training) or intervention (training) group. The impact of the training program on pharmacists' naloxone service structure activities completed (measured via Likert-type scale from 1=no progress to 7=completed on a 16-item index), process activities engaged in (measured via Likert-type scale from 1=never to 7=extremely frequent on a 16-item index), and self-reported number of naloxone prescriptions dispensed over 3 months were assessed via online surveys at baseline and 3 months. Mean differences between control and

intervention groups across time-points were assessed using two-way mixed ANOVA with Bonferroni post-hoc tests or Mann Whitney U (alpha=0.05).

Results: Fifty-seven community pharmacists completed assessments at both baseline and 3 months (n=29 control, n=28 intervention). About 80% of participants were white, 77-80% were female, and 43-56% were employed in independently-owned community pharmacies. From baseline to 3 months, mean[SD] intervention group naloxone service structure activity completion score (2.66 [1.49]-3.39 [1.22], p=0.004) and process activity engagement score (2.35 [1.04]-3.03 [0.94], p<0.0005) increased; however, increases were not statistically significant compared to control (structure p=0.972, process p=0.151). Mean number of all forms of naloxone prescriptions dispensed increased from baseline to 3 months in the intervention group (3.70 [7.65]-4.50 [6.11], p=0.028), but the difference was not significant compared to control (p=0.286).

Implications/Conclusions: Although intervention pharmacists' naloxone service behaviors (structure activities completed, process activities engaged in, and number of naloxone prescriptions dispensed) increased from baseline to 3 months, differences were not statistically significant compared to control. The study was limited by its short time-frame, and monthly study reminder emails may have prompted both intervention and control groups to increase implementation of naloxone services and diluted the effect of the intervention. In addition to the online educational webinar, future studies may explore the use of multiple strategies to enhance implementation of naloxone services.

511-Physician-Reported Considerations that Promote Referrals to a Community-Based Specialty Pharmacy. Miller C, Marciniak M, University of North Carolina at Chapel Hill, Michaels N, Sona Pharmacies and Sona Benefits, Hayes, Jr. H, Sona Specialty Pharmacy, Rhodes L, Palm Beach Atlantic University and University of North Carolina at Chapel Hill. Email: cmiller@sonapharmacy.com.

Objective: The National Association of Specialty Pharmacy defines a specialty pharmacy as one that primarily focuses on the procurement and dispensing of medications for persons with rare, serious health conditions. Due to the complex and costly nature of treatment, high-touch communication among the pharmacy staff, patient, and provider office is essential. While literature has centered on describing health system-based models for pharmacist-provider collaboration in specialty care, community-based specialty pharmacies are able to provide comparable services aimed at minimizing costs and optimizing outcomes. Given the frequency and depth of correspondence between pharmacy staff and providers in specialty care, it is likely that specialist physicians have clear preferences when selecting which specialty pharmacy to work with. The objective of this study is to determine the factors considered most valuable by specialist physicians when referring their patients to a community-based specialty pharmacy for prescription dispensing and medication management services.

Methods: This cross-sectional study will be conducted online via Qualtrics. Using the North Carolina Board of Medicine database, a link to a 25-item survey will be emailed to actively licensed physicians. Data will be included if obtained from physicians in the following specialties: Allergy/Immunology, Cardiology, Dermatology, Endocrinology, Gastroenterology, Infectious Disease, Nephrology, Neurology, Obstetrics/Gynecology, Oncology, Pulmonology, Rheumatology, or Urology. Medical residents, physician assistants, and nurse practitioners will be excluded. The questionnaire will ask physicians to consider pharmacy-specific factors in three primary categories: (1) pharmacist/pharmacy accreditation and credentials, (2) provider support services (e.g., prescribing templates, billing assistance), and (3) patient support services (e.g., financial assistance programs, disease state education). The questionnaire will be pilot-tested among a convenience sample of student pharmacists and pharmacists for feedback on validity and question structure. Completion of the survey is voluntary and confidential. The survey will remain open for 30 days, with a reminder email sent on day 15. To incentivize survey completion, participants will have the option to enter a drawing to receive an Amazon gift card. Once the survey has closed, data collected will be exported to a Microsoft Excel file for analysis. Descriptive statistics will be used to analyze survey responses. Inferential statistics will be used to detect differences in physician opinions, considering items such as number of years in practice and area of specialization.

Preliminary Results: Institutional Review Board approval is anticipated in October 2019. Surveys will be distributed in November 2019. Preliminary analysis indicates there are approximately 15,000 specialist physicians practicing in North Carolina. We anticipate a 5-10% response rate. Data analysis will be conducted in January-February 2020.

Conclusion/Implication: As the use of specialty medications in the United States continues to grow significantly, effective communication and close partnerships between the prescriber and the dispensing specialty pharmacy are more crucial than ever. This project seeks to identify the factors most highly valued by specialist physicians when choosing to form these partnerships with community-based specialty pharmacies through patient referrals.

512-Overdose and Alcohol-Sensitive Immediate Release Sleeping pill (OASIS) for Deterring Accidental or Abuse-Related use of Sleeping Pills. Patki M, Jucha N, Patel K, St. John's University College of Pharmacy and Health Sciences. Email: manali.patki16@my.stjohns.edu.

Objective: The objective of the current research was to formulate a sleeping pill that can deter accidental overdose and abuse with alcohol. As many as 70 million Americans are affected by sleeplessness. With the availability of sleeping pills (i.e. Zolpidem, Eszopiclone, Zaleplon), many Americans turn to them as the first line of remedy for their insomnia. The sleeping pills available on the market have shown limited benefits. About 40% of people taking a sleeping pill have used it in potentially harmful ways. When abusing sleeping pills or combining with alcohol, the effects of these sleeping pills pose to be deadly. With insomnia being a common

problem and the misuse of sleeping pills becoming ever more prevalent, it is imperative to protect the public by developing formulations that prevent deadly consequences.

Methods: We have attempted to formulate a tablet that minimizes the release of agonist in case of overdose and releases an antidote when consumed with excess amount of alcohol. This was done through the use of polymer chemistry (Eudragit E PO and Eudragit RS PO) and hot-melt extrusion to encase the active drug and antidote in two separate polymers. Since the use of controlled substances is limited, the simulated active drug was extruded in Eudragit E PO was metoprolol tartrate. The simulated antidote was hydrochlorothiazide which was extruded in Eudragit RS PO. Crushed filaments were converted into a tablet with a rapidly soluble co-processed alkalizing agent.

Results: Dissolution studies of a single tablet and multiple tablets (5) in Fasted state simulated gastric fluid (FaSSGF) confirmed that the release of agonist was significantly reduced in multi-tablet dissolution. Further, release of antagonist was significantly higher when the tablet was exposed to FaSSGF+20% ethanol and various alcoholic beverages. Single pill dissolution in FaSSGF showed immediate release of the agonist. Nearly complete release of the agonist was observed within 60 minutes. Antagonist release was <20% in FaSSGF while it was significantly enhanced in alcohol containing dissolution medium. On the other hand, agonist release was reduced significantly to 60% in the presence of alcohol.

Conclusion: Appropriate use of eugragit polymer chemistry could be helpful in designing a tablet to prevent release of agonist in overdose and simultaneous release of antagonist when the tablet is consumed with alcohol.

513-Naloxone or Die: Understanding the Role of Governmental Agencies in the Development of Novel Opioid Antagonists for Opioid Overdose Reversal. Singh P, University of Southern California. Email: sing176@usc.edu.

Objective: This study examines the current landscape of opioid antagonists for the indication of opioid overdose reversal and the role of governmental agencies in promoting novel developments. Each day, approximately 130 Americans die from opioid overdose. Yet, since 1971, Naloxone has remained the only opioid antagonist approved by the U.S. Food and Drug Administration (FDA) on the market for this indication. In 2017, government agencies began taking greater initiative in fighting the opioid epidemic. Now, after almost half a century, new advances in the development of novel opioid antagonists are emerging. In 2018, Opiant Pharmaceuticals announced the development of Intranasal Nalmefene, an intranasal formulation with a faster onset and longer-acting response compared to Naloxone. In the same year, Insys Therapeutics conducted a pharmacokinetics study on a longer-lasting formulation of Naloxone. These novel developments are important, as the Naloxone formulation currently on the market is short-acting and induces withdrawal syndrome among its known shortcomings.

Methods: In order to understand the current landscape of opioid antagonists for opioid reversal, a ClinicalTrials.gov search was conducted using the key terms “opioid antagonist” and “opioid overdose.” Additionally, a PubMed search was conducted using the key terms “opioid antagonist” and “opioid overdose reversal” with the filter of “humans.” A Drugs@FDA search was performed using the terms “naloxone” and “nalmefene” to better understand the drugs currently on the market or in development. To better understand how governmental agencies have approached the opioid crisis, press releases and various agency reports were analyzed. To assess the role of federal versus state government agencies’ actions in addressing the opioid epidemic, this analysis included both federal government agencies, such as the FDA and the National Institute on Health (NIH), and California state agencies, such as the Department of Public Health. Government agency actions were categorized around the 2017-time period, between 2013 to 2016 and between 2017 to 2019, and were catalogued for comparison.

Preliminary Results: Preliminary findings suggest that governmental actions have played a significant role in the development of novel opioid antagonists. Government actions to address the opioid crisis have increased, in general, since 2017. There is an evident relationship between the development of novel opioid antagonists and the increased effort by government agencies to combat the opioid epidemic.

Conclusions/Implications: The opioid epidemic has taken both a social and economic toll on the United States. The severity of this epidemic calls for a greater understanding of measures that can reduce the number of lives lost. The development of novel opioid antagonists that can overcome Naloxone’s shortcomings is crucial in this effort. This study serves to inform pharmacists, government agencies, and pharmaceutical companies about the current landscape of opioid antagonists for the reversal of opioid overdose and the influence of governmental agencies in the development of novel treatments.

514-Buprenorphine: Pharmacy-Related Barriers and Motivations for Illicit Use. Thacker E, WVU School of Pharmacy. Email: ept0003@mix.wvu.edu.

Objective: Buprenorphine has been demonstrated to effectively treat opioid withdrawal, increase treatment retention, and decrease illicit opioid use. While buprenorphine has been used as an effective treatment for opioid use disorder for nearly 30 years, significant barriers to access still exist. The overall objective of this study is to determine whether pharmacy-level factors are associated with 1) access to buprenorphine and 2) illicit use of buprenorphine. The secondary objectives are to identify the type of pharmacy-related barriers patients experience when filling buprenorphine prescriptions, reasons for use of non-prescribed buprenorphine, determine if patients prescribed buprenorphine are obtaining naloxone and to identify other factors that affect retention in buprenorphine treatment.

Methods: Patients receiving outpatient or inpatient treatment were recruited to complete a brief self-reported survey. Participants receiving buprenorphine at an office-based opioid treatment (OBOT) or inpatient residential facility, that have received at least 3 buprenorphine prescriptions in the past 12 months were eligible to complete the survey. The survey instrument consisted of 33 items and took approximately 5 to 15 minutes to complete. The survey contained demographic information, experiences with illicit buprenorphine, and factors that might limit access to obtaining buprenorphine therapy.

Preliminary Results: At current, 39.5% of respondents stated that they had experienced at least one problem when trying to fill their buprenorphine prescription within the past 12 months and 18.6% reported having to go without their buprenorphine due to pharmacy related issues. Almost half (48.8%), reported having taken illicit buprenorphine within the past 12 months, with the majority of those reporting use for therapeutic indications (88.2% prevent/reduce cravings, 82.4% ease withdrawal, and 58.8%to maintain abstinence from other drugs). Illicit use was also reported for benzodiazepines, anticonvulsants, and stimulant medications.

Implications/Conclusions: Although work has been done to expand access to buprenorphine, pharmacy-related barriers have not been described in the published literature. Additional research is needed to determine whether pharmacy-related barriers are prospectively associated with an increased risk of opioid relapse and illicit use buprenorphine.

Technology

515-Small Molecule Release Kinetics from 3D Printed Hydrogel. Aroom K, Schultheis L, University of Maryland, Dept of Bioengineering, Metzbower A, University of Maryland. Email: karoom@umd.edu.

Objective: This study purpose was to quantify the rate of release of a small, complex, organic molecule from 3D printed alginate-nanofibriallar cellulose. The first legally marketed 3D pharmaceutical, Spiratam, is a disintegrating tablet. However, 3D printed hydrogels may be more useful for topical or internal drug administration, but have not yet achieved FDA approval. 3D printing offers the potential to create sophisticated platform geometries to control drug release. The design of a 3D geometry may allow differential dosing of combination drug products from a single platform once the material and chemical interactions with each pharmaceutical have been characterized. II.

Methods: Hydrogel manufactured from nanofibriollar cellulose (CAS# 9004-34-6), sodium alginate (CAS # 9005-3803) with D-mannitol and HEPS buffer was 3D printed and chemically crosslinked with calcium chloride to produce cylinders. Allura red was selected as an example of a relatively small, molecule to indicate behavior of complex organic, hydrophilic drug migration through 3D printed hydrogel. Allura in water solution was installed into the central cavity of each cylinder acting as a drug receptacle or reservoir. The filled hydrogel cylinders were placed onto a perforated platform over a spinning bar in a Ringer's lactate bath at 20 deg C. The Allura concentration in Ringer's bath was measured spectrophotometrically (504 nm) at intervals ranging from 10 minutes up to 18 hours against a standard curve. III.

Preliminary/Final Results: The concentration of Allura in the surrounding bath followed an accelerating rise-time in the first two hours. Visually, the dye front was observed to immediately penetrate and then gradually migrate through the wall of the 3D printed hydrogel, so that an abrupt elevation of Allura concentration in the bath corresponded to the time when the dye reached the external perimeter of the 3D printed hydrogel cylinder. Increasing the thickness of the walls and floor of the hydrogel cylinder predictably delayed the acceleration phase of Allura appearance in the surrounding bath while increasing the surface area of the Allura reservoir accelerated transfer to the exterior. Experimental findings followed a multicomponent mathematical model using Laplace transforms with several lag elements in series, each with different time constants. Accumulation within the hydrogel behaved as a compartment where hydrogel volume, cylinder wall thickness and its surface area affected the time constants. Experimental release-rate was faster than the model, perhaps because of dissolution of alginate and expansion of the nanofibrillar cellulose scaffold. IV.

Implications/Conclusions: Single-dose administration of combination pharmaceuticals is attractive for anatomical sites benefiting from high local concentrations where repeat dosing is not practical. Therefore we envision that 3D printing may enable combination drug therapy from a single-dose platform, geometrically tailored to patient-specific requirements. Ongoing studies to characterize the effect of small molecule size, charge and lipophilicity in the context of hydrogel chemistry and physical properties are expected to clarify the effects of print geometry on drug release. As these data become available, compounding pharmacists may consider utilization of 3D printed hydrogels as drug-release platforms for patients benefiting from combination drug therapy.

516-Pharmacy & Blockchain: Where We Stand and Beyond. Corneille K, Nova Southeastern University. Email: corneillejrk@gmail.com.

Objective: Pharmacy methodology is ready for change. Every profession experiences a frontier that must be crossed for the next generation of professionals to flourish. As we dive into the world of big data, machine learning and artificial intelligence, older practices will become less efficient and ultimately impede progress. As pharmacy innovation continues to press forward, older methods of conducting various functions must be addressed. The goal in this current medical landscape is more personalized medicine with the hope of making sure the end user receives optimized therapy. Currently, drug prices are rising, clinical trials are feeling the effects of being on a time and financial crunch and provider communication is increasingly becoming more necessary. One potential solution could be the technological originality associated with virtual currency. Blockchain technology serves as a potential malleable vehicle to help expedite the beginning stages of pharmacy embracing the new brave world of technology. The purpose of

this paper was to survey the current literature landscape regarding blockchain usage within the pharmacy realm and provide commentary on researcher's findings thus far in pharmacy's infant use of the technology. The following text serves as a guide to what thought leaders currently believe about the merits and applicability of blockchain technology.

Methods: The following databases were used to find the most recent text on pharmaceutical applications and their relation to blockchain technology: PubMed, EMBASE and Google Scholar. Various key phrases included "Blockchain and Pharmacy" "Pharmacy and Blockchain" "Blockchain Use" "Blockchain Hacked" "Blockchain Pilot Programs AND Pharmaceuticals." After combing through the literature, I selected which articles focused on aspects heavily involved in pharmacy such as clinical trials, pilot programs regarding drug recycling and the security of the technology.

Results: Ultimately, nine articles were chosen with two websites detailing the inner workings of the potential threats to the blockchain.

Conclusion: Blockchain technology is still in its infancy. Most of the thoughts and applications of the technology itself is theoretical. Although the technology has tremendous promise and potential, promise and potential are not tangible entities. Blockchain potential within the drug supply chain is intriguing but many moving parts must be put into place before anything can come to fruition. As with any major technological shift, there is a reticence that must be addressed before full utilization of the technology within pharmacy.

517-Electronic Health Information Seeking Among Hypertensive Patients: A Secondary Analysis Of Hints Data. Eze C, Lester C, Coe A, Dorsch M, Farris K, University of Michigan. Email: ceeze@umich.edu.

Objective: Hypertension is a chronic disease that requires active involvement of the patients to achieve blood pressure control. Innovations in information and communication technology provide opportunity for patients to seek health information electronically to improve their health, however, little is known about the prevalence and characteristics of hypertensive patients seeking self-health information electronically. The objective of this research was to identify the predictors of electronic health information seeking among adult hypertensive patients. These results are important so we can target electronic apps or other support to individuals with hypertension.

Methods: The study was a secondary analysis of data from Health Information National Trends Survey (HINTS) 5, cycle 2. HINTS was developed by the Health Communication and Informatics Research branch of the National Cancer Institute. HINTS is a nationally representative survey that monitors how American adults 18 years and older obtain and use health information. We used the single-mode mail survey of 3504 adult Americans from 2018. We first stratified respondents according to hypertension status. Then, we extracted respondents with hypertension (N=1585) and applied sample weights to obtain population-level estimates for the United States. Descriptive statistics report characteristics of the hypertensive respondents based on relevant survey items (e.g., seeking electronic health information and ownership of a smartphone or tablet). Multivariable logistic regression with odds ratio analysis were performed with 10 covariates (e.g., age, educational levels, and co-morbidities) to identify the predictors of electronic health information seeking among adult hypertensive patients. The main outcome was electronic self-health information seeking in the past 12 months ("yes" or "no").

Results: Among individuals with hypertension in United States, the greatest percentage of the respondents (35.2%) were 50-64 years of age and majority were men (53.4%). Diabetes (33.0%) was the most common co-morbidity followed by depression (27.1%) and heart conditions (14.9%). Almost two-thirds (64.6%) of individuals with hypertension sought self-health information electronically, compared to 74% of those without hypertension ($p<0.001$). For those hypertensive patients who seek self-health information electronically, 57.2% reported having both smartphone and tablet, 28.4% have smartphone only and 6.7% have only a tablet. Controlling for covariates, the odds of seeking self-health information electronically increased with age (OR=1.06, 95% CI=1.04-1.08). Hispanics (OR=2.7, 95% CI=1.3-5.7) had a higher odds of seeking self-health information electronically compared to non-Hispanic whites. Compared to respondents with less than a high school education, the odds of seeking self-health information electronically is decreased for respondents with educational levels greater than High school [Some college (OR=0.3, 95% CI=0.1-0.9); Bachelors (OR=0.3, 95% CI 0.1 -0.8); Postgraduate (OR=0.1, 95% CI=0.05-0.4)]. Having diabetes, depression or heart conditions did not affect the odds of seeking self-health information electronically.

Conclusion/Implication: Two-third of hypertensive patients seek health information electronically. Interventions designed to communicate through these electronic channels considering age and education can reach patients to help them in health improvement. Increasing the amount of high quality electronic information may be more likely to help people who are Hispanics. Individuals with greater education seem to require a strategy to direct them to electronically seek self-health information.

518-Improving FDA Drug Recall Notifications Through Technology: Getting The Right Information To The Right People. Pavlakos R, UCSF Dept of Clinical Pharmacy. Email: rose.pavlakos@ucsf.edu.

Objective: The University of California, San Francisco (UCSF), like many others have been greatly impacted by the effects of recent drug recalls. Healthcare systems and patients require current and complete information about regulated products to ensure the best care. The FDA recognized a need to better inform those impacted and developed a Healthy Citizen Drug Recall widget –software module that can be embedded into an electronic health record (EHR) – to improve notifications to healthcare providers and patients with more timely up-to-date drug recall information. Recalls often require timely clinical actions. Current notifications to consumers

suggest for patients to talk to their healthcare provider about the best course of action. However, the drug recall notification process does not currently involve the prescribing clinician. There is currently no systematic process for notifying prescribing physicians and other healthcare providers who often lack understanding of how to handle drug recalls. The FDA teamed up with UCSF's primary care and cardiology clinics to integrate and test their drug recall widget in UCSF's health system. UCSF's IT team developed a process for identifying patients who had been prescribed a drug that has been recalled, as determined using the drug recall widget. UCSF then created a message in UCSF's EHR patient portal to notify patients with guidance on next best steps. This system is currently being tested by UCSF in collaboration with the FDA.

Methods: The objective of this FDA-funded project is a demonstration of technical and clinical feasibility of using the FDA's drug recall widget within UCSF's EHR. Upon completion of this project we hope to alert patients to drug recalls relevant to them, through a window within Epic's patient portal (MyChart) using the FDA widget to present official FDA drug recall information. Initially, we will complete a moderated test using Zoom to walk patients and clinical staff through an example case. This encounter will be recorded. We will assess feasibility of our workflow by identifying their ability to complete tasks. Feedback will be documented using a Redcap survey. UCSF worked with their interdisciplinary team to define roles, develop workflows, design and test the information presentation, and to identify decision support needs. Primary care and cardiology established a relationship with Clinical IT and Clinical IT governance to ensure alignment of objectives, and to expedite transition of the drug recall from testing into live production.

Preliminary Results: Both FDA and UCSF's research teams have a better understanding of difficulties related to proper patient/provider notifications, patient identification, and solutions to recall issues. Most importantly, recalls for specific lot numbers cannot be accurately targeted to patients because the dispensed lot number is not recorded. This results in a high rate of false positive notifications that may be counterproductive. The most direct solution is for lot numbers and NDC codes to be documented on the prescription label with each dispensed prescription. We will present results of user feedback from patients, physicians, and pharmacists in 2020. We will also present difficulties of integrating new SMART-on-FHIR technology into our healthcare system.

519-Identifying Uses of Electronic Health Record Access in an Independent Community Pharmacy. Talleh J, Smith M, University of Arkansas for Medical Sciences. Email: jjtalley@uams.edu.

Objective: A significant barrier in community pharmacy is the lack of information exchange between health settings. Communication between primary care and community pharmacies has long been a problem, with communication usually being limited to phone calls or fax. The multitude of calls and faxes has even been defined by the American Medical Association as "interference with the practice of medicine and unwarranted." This is where having shared access to Electronic Health Records (EHR) would help to bridge the communication gap. Few pharmacies have reported in the literature to gain access to health information exchanges and little is known on how to implement and use this information in the community pharmacy setting. One independent pharmacy has recently gained read-only access to an EHR with a primary care clinic. The objective of this study is to identify and prioritize existing patient care services that could benefit from EHR access and create a workflow model. A secondary objective is to identify potential barriers and facilitators from pharmacy staff to implementing the proposed model.

Methods: A qualitative cross-sectional study will be conducted using semi-structured interviews with pharmacists and technicians at an independent community pharmacy. Interviews will be conducted in October -November 2019. The semi-structured interview guide will be based on Consolidated Framework for Implementation Research (CFIR). Pharmacists and technicians will be interviewed separately. The interview guide for the pharmacists will include questions on the potential uses of EHR and workflow design (i.e. roles and responsibilities of the staff). The interview guide for technicians will include questions on potential barriers and facilitators to implementing EHR into workflow. The interviews will be recorded, transcribed, and two coders will identify an initial code list for a thematic content analysis.

Preliminary Results: Research is in progress and has received IRB approval. The results will provide insight into how EHR access can be used to enhance patient care services within an independent community pharmacy and what barriers might be present in implementing EHR access into an independent community pharmacy.

520-The Impact of a Digital Vaccine Consent Form in a Large Community Pharmacy Chain. Unal A, Nadpara P, Goode J, VCU, Sparkman A, Kroger Pharmacy. Email: unalas@vcu.edu.

Objective: A national large community pharmacy chain is implementing a new digital platform to eliminate the need for patients to fill out a traditional vaccine consent form in the pharmacy. The new digital vaccine consent form allows patients to complete the form online, where it will be transmitted directly to the pharmacy's network. •To identify the significant characteristics of patients who use an online digital vaccine form •To evaluate patient satisfaction and confidence in utilizing online platforms to receive pharmacy services.

Methods: This three month prospective study will be conducted in the Mid-Atlantic Division of a national large community pharmacy chain which includes 109 stores in the following states: Virginia, West Virginia, North Carolina, Kentucky, Ohio, and Tennessee. A survey was developed using information from the literature to understand usage and perception of the online digital vaccine form. The survey consists of 16 questions including open-ended, multiple choice, and write-in responses pertaining to patients' perceptions of the digital vaccine consent form. An email will go out to the entire pharmacy staff in the Mid-Atlantic Division explaining the purposes of the research project and will include the survey. The email will contain instructions on the procedure for distributing the

survey post-vaccination and how to return completed surveys. Patients will be asked to complete the survey in the private consultation rooms. Pharmacy staff in each store will recruit ten patients to complete a survey. Once all surveys are completed, the surveys will be mailed to the corporate office in Roanoke, Virginia. Surveys will be analyzed using descriptive statistics. On the division level, data will be collected to identify determinants of patients who use the digital vaccine consent form. This information will include age, gender, new patient status, current use of pharmacy applications, and previous vaccines received at the pharmacy. Pharmacy operations will provide the de-aggregated data that will be analyzed through regression. This data will then be compared to survey results to analyze overall usage and perception of the digital vaccine consent form.

Preliminary Results: Research in progress.

Implications/Conclusions: Understanding what drives patients to use digital platforms to utilize pharmacy services has important implications for the pharmacy.

Transitions of Care

521-Quantification of Admission Diagnoses in a Non-Targeted Employer-Based Transition of Care Program. Abasi R, University of Missouri -Kansas City. Email: Rnabasipharm@gmail.com.

Objective: The objective of this study is to quantify admission diagnoses encountered in a non-targeted employer-based transition of care (TOC) program. To help prevent hospital readmissions within 30-days, many institutions have implemented TOC programs with the overall objective of improving patient care, meeting quality metrics, and lowering Medicare penalties. Incorporating pharmacists into TOC programs creates opportunities to solve medication-related problems and potentially prevent hospital readmissions. Many TOC programs in the literature have focused efforts on patients with conditions and procedures included in the Medicare Hospital Readmission Reduction Program (HRRP), a value-based care program in which hospital reimbursement is reduced for readmissions related to six targeted conditions. These conditions are acute myocardial infarction, chronic obstructive pulmonary disease, heart failure, pneumonia, coronary artery bypass graft surgery, and elective total hip or knee arthroplasty. The TOC program assessed in this study was developed within the framework of a locally owned, self-insured grocery store chain. TOC services within the program are provided to employees possessing the company's health insurance. Unique to this program, all beneficiaries experiencing an event leading to a hospital admission are offered an opportunity to engage with a community pharmacist through a comprehensive medication review. There is currently limited data on the prevalence of non-HRRP targeted conditions addressed in TOC programs and sparse data related to TOC programs embedded within an employer-based insurance program.

Methods: This is a retrospective, observational study using data collected within the grocery store chain TOC program including: patient demographics and admission diagnosis codes. Included patients are those enrolled in the employer-based insurance plan who experienced a hospital admission between January 1st 2017 and August 31st 2019. Excluded patients are those transitioning to a long-term care facility, acute rehab, or hospice. Additional exclusion criteria are those ≤18 years of age; admissions for childbirth, attempts of suicide, psychiatric conditions, or alcohol or illicit drug use; and admissions less than 2 days in duration. ICD-10 codes will be utilized to categorize admission diagnoses. Descriptive statistics will be used to describe patient demographic information, determine the rate of hospital admission for each diagnosis code category, and assess the percentage of patients that would be engaged using the HRRP diagnoses versus the current model.

Results: Research in progress.

Implications: Results from this study will be used to identify preventable hospitalization causes and complete a needs analysis to identify opportunities for reducing employer medical expenses, such as targeted clinical interventions and educational materials. Additionally, the results will be used to assess the structure of the current TOC program and determine the impact on the program if the focus was changed to target the six conditions included in the HRRP.

522-Effectiveness of Pharmacist Involvement on Hospital Readmissions: Transitioning Patients with Congestive Heart Failure from Inpatient to Outpatient. Arthur J, West Virginia University, Capehart K, Elswick B, West Virginia University School of Pharmacy, Shelton E, Kroger. Email: jarthur2@hsc.wvu.edu.

Objective: Title Effectiveness of community pharmacist involvement on hospital readmissions: transitioning patients with congestive heart failure (CHF) from inpatient to outpatient Objectives The objectives of this study are to 1) examine the effectiveness of pharmacist intervention on 30-day readmission rates for subjects with CHF and 2) compare readmission rates pre-post implementation of this new pharmacist service.

Methods: This study is a pre-post interventional study conducted by a community pharmacist in collaboration with a health system's cardiology department. Subjects who meet eligibility criteria are identified from reports generated through a health system's electronic health record. Eligibility criteria for this study are: greater than or equal to 18 years of age, CHF admission in the 12 months prior to current admission, documentation of echocardiogram indicative of heart failure with reduced ejection fraction (HFrEF) (EF <40%), borderline preserved ejection fraction (EF 41-49%) or heart failure with preserved ejection fraction (HFpEF) (EF >50%). Patients who are pregnant or have end-stage renal disease are excluded from this study. Eligible subjects are then consented and educated by a pharmacist while inpatient. The education provided includes information on disease state, medication adherence, medications, symptom monitoring and management, and the availability of the outpatient pharmacy's bedside delivery program (Meds to Beds).

The subjects meet with a pharmacist in person at the outpatient cardiology clinic for a follow-up appointment within seven days of hospital discharge. This visit includes a complete medication review of all prescription and non-prescription medications, drug allergies and intolerances, tobacco and alcohol use, and vaccination status, as well as assessment of any new adverse medication effects or intolerances post discharge. Subsequent outpatient clinic appointments focus on collaborative implementation of care plans with the cardiology team and reinforcement of previous education. The dataset includes age, ejection fraction, gender, race, utilization of the Meds to Beds program, number of readmissions, and number of pharmacist visits. This intervention will be conducted from approximately October 2019 to February 2020, with 30-day readmission data collection through March 2020. Retrospective data to compare readmission rates will include patient age, ejection fraction, gender and number of readmissions. Readmission rates will be compared to retrospective readmission data for congestive heart failure patients from October 2018 to March 2019 and evaluated for statistical significance using the Chi Square Method of analysis.

Preliminary/Final Results: Research in progress.

Conclusions/Implications: Research in progress.

523-Clinical Impact of a Community Pharmacy-Based Transitions of Care Service at a University Medical Center on Reducing 30-day Hospital Readmission Rates: Pilot Study. Davis D, Alvarez G, Pham H, Nova Southeastern University College of Pharmacy. Email: dd1444@nova.edu.

Objective: The process of transitioning patients from various healthcare settings is a central part of patient safety. The transfer of information is crucial among all healthcare professionals involved in maintaining quality of care. Unfortunately, the gap of communication continues to expand, resulting in staggered trade-off of information. Community pharmacists are the most accessible health professionals, providing medication therapy management (MTM) and other clinical services. However, these services are not integrated in the transitions of care process. The purpose of this study is to evaluate the clinical impact of a community-based transitions of care program to decrease 30-day hospital readmission rates and improve quality of life.

Methods: The study will be submitted to the Institutional Review Board (IRB) for approval. A community pharmacy will collaborate with affiliated physicians at the university medical center to establish a hospital post-discharge transitions of care program for patients recently discharged. Adults who are 18 years or older, referred by their primary care physician, and agreed to participate will be included in the study. Pregnant women and patients who are terminally ill will be excluded from the study. A four-point clinical intervention will be conducted for each participant over a thirty-day period. During each post-discharge intervention, participants will have the opportunity to speak to a clinical pharmacist either in-person or via telephone. The initial intervention will be conducted within 72-hours from receiving physician referral request. Participants will complete a pre -EQ-5D-5L health questionnaire, medication reconciliation and MTM. The pharmacist will assess for drug related problems and fax pharmacotherapy recommendations to referring physicians. In the second week post discharge, pharmacist will follow-up to assess for adherence, side effects or adverse reactions and previous concerns from week one interventions. Three weeks post-discharge, pharmacist will assess adherence and side effects. The final follow-up call will take place on day twenty-eight. Patients will be assessed for hospital readmission and complete the post-EQ-5D-5L health questionnaire. All data will be deidentified prior to statistical analysis to maintain patient confidentiality.

Preliminary/Final Results: N/A.

Conclusion/Implications: N/A.

524-Provider Satisfaction with a Pharmacist Transitions of Care Service at a Large Academic Medical Center. Elder M, Michigan Medicine, Coe A, Lester C, Department of Clinical Pharmacy, University of Michigan College of Pharmacy, Thompson A, Michigan Medicine, University of Michigan College of Pharmacy, Kippes K, Michigan Medicine, Pharmacy Innovations and Partnerships. Email: elmaryjo@med.umich.edu.

Objective: The objectives of this study are to determine providers' overall satisfaction with the pharmacy transitions of care (TOC) service and documentation; to determine what providers find useful about the pharmacy TOC documentation; and to determine if improvements in the pharmacy TOC documentation is warranted. TOC services have become a focus of many healthcare systems to decrease readmissions and related healthcare costs. While pharmacist provided TOC services have demonstrated a positive impact through decreased readmission rates, provider satisfaction with these services has not been well studied. Patients with high (10-12) and highest-risk (≥13) LACE scores are followed by a multidisciplinary TOC program upon discharge. This program includes a nurse care-navigator phone call (within 2 days post-discharge), TOC pharmacist phone call (3-6 days post-discharge), and primary care provider post-discharge follow-up appointment (7-10 days post-discharge). The TOC pharmacist phone call includes medication reconciliation, assessment of medical stability of the patient, and a comprehensive medication review. This information is documented in a standardized template that is then sent to the patient's primary care provider and the provider seeing the patient for the post-discharge follow-up-appointment.

Methods: The design is a descriptive cross-sectional study. A satisfaction survey will be created and administered via REDCap®. Questions included in the survey will be informed by surveys of provider satisfaction with pharmacist provided services in the literature. The survey will be piloted to a small sample of providers (n=10), revised for clarity, and then administered by survey email link to all providers who perform post-discharge follow-up visits. A reminder email for the survey will occur at 2 weeks if no response.

Survey questions will include demographic data including provider type years in practice, and primary practice site; provider satisfaction with and usefulness of the TOC documentation components; and overall satisfaction with the pharmacist TOC services and documentation. A mixture of 5-point Likert scaled agreement, checklist, and open-ended questions will be used. Eligible participants include providers (MD/DO attendings and residents, physician assistants, and nurse practitioners) who see patients for post-discharge follow-up appointments in family medicine and general medicine clinics. The primary outcome is level of provider satisfaction with the pharmacy TOC service and documentation. Secondary outcomes include demographic characteristics of the providers using the pharmacist TOC documentation, level of satisfaction with pharmacist TOC note components, and area for improvement within the pharmacist TOC documentation. Descriptive statistics will be used.

Results: Data collection and analysis are ongoing.

Conclusions/Implications: The data from the surveys collected will be used to determine how providers use the information during their post-discharge follow-up appointments and if improvements in the pharmacist TOC notes are warranted.

525-Informing the Development of a Transitions of Care Program Between an Emergency Department and Regional Supermarket Chain Pharmacies. Gabriel C, Coley K, Antinopoulos B, McGivney M, Carroll J, University of Pittsburgh School of Pharmacy, Richardson R, Vercammen V, Giant Eagle Pharmacy. Email: ctg12@Pitt.edu.

Objective: The objective of this project is to conduct a qualitative evaluation of stakeholder perspectives to inform the design and implementation of a transitions of care program between an emergency department (ED) and regional supermarket chain pharmacies. Patients discharged from emergency departments often have acute problems, high uninsurance rates, and lack of established physician care. A large proportion of these patients are prescribed at least one medication upon ED discharge, and the rate of primary medication nonadherence in this population exceeds 20%. Primary medication nonadherence following ED discharge can be attributed to: late medication pick-up, patients deeming the new medication unnecessary, transportation issues, home supply of the medication, or prohibitive cost, among others. Patients discharged from the emergency department who are contacted by community pharmacists are more likely to attend their hospital discharge follow-up appointments and less likely to be readmitted to the hospital within 30 days compared with those not contacted. While there is an abundance of data to support transitions of care programs following hospital discharges, studies evaluating the impact of these programs following ED encounters are limited. There is a unique opportunity to implement transitions of care programs that connect patients discharged from the ED to community pharmacies. To meet patient needs, a regional supermarket chain pharmacy has partnered with a community hospital ED to develop a transitions of care program.

Methods: Pharmacies from a regional supermarket chain will be identified for inclusion based upon geographic proximity to a local community hospital emergency department. A purposeful sampling of key stakeholders will be selected from both the supermarket pharmacy and the ED. These stakeholders will include pharmacy administrators, pharmacists, physicians, nurses, and case managers. Subjects will be invited to participate in semi-structured, one-on-one interviews with the investigator. Interview questions will be based on the Consolidation Framework for Implementation Research (CFIR). Four CFIR domains will be utilized: (1) include networks and communications; (2) leadership engagement; (3) process; and (4) intervention characteristics. Interviews will be audio-recorded and transcribed. A codebook will be developed by the research team and two investigators will code each transcript independently. Coding discrepancies will be resolved through discussion. The study team will conduct a mixed deductive-inductive analysis to identify common themes that will inform development of a future transitions of care program.

Preliminary Results: In progress.

Conclusions/Implications: This project will elicit stakeholder perspectives on the development of a local transitions of care program between a community pharmacy and ED. This information will be complied as a framework for the local program and provide guidance to others on key aspects of designing similar transitions of care programs.

526-Improving the In-Between: Pharmacist-Managed Hypertension in a Transitional Care Clinic. Ledford K, Metzger A, University of Cincinnati College of Pharmacy -Five Rivers Health Centers. Email: ledforkb@ucmail.uc.edu.

Objective: To evaluate the impact of pharmacist-managed hypertension on patients in the transitional care clinic (TCC) setting. More specifically, to demonstrate the effect pharmacist-managed pharmacotherapy and counseling can have on systolic and diastolic blood pressure (BP) for patients who 1) have persisting hypertension post-hospital discharge and 2) are transitioning to community-based primary care.

Methods: This is a pre-post, prospective study implemented at a federally qualified health center (FQHC). Patients screened for the study include adults presenting for a transitional care clinic (TCC) appointment within 30 days of hospital discharge, who have persisting hypertension (>130/80 mmHg) as defined by the American Heart Association (AHA). Patients are excluded if they are actively participating in or have participated in pharmacist-managed care for hypertension or other forms of education or coaching for the purpose of hypertension management in the six months prior to their TCC appointment. Patients meeting inclusion and exclusion criteria will participate in visits with a clinical pharmacist every two weeks following hospital discharge, until their first primary care provider (PCP) visit. Blood pressure will be monitored for each patient at baseline (first TCC appointment), at all pharmacist visits, and at the first PCP visit. Pharmacists visits will include pharmacotherapy initiation or titration, education on lifestyle changes for

improving blood pressure, and counseling on self-monitoring practices. The average percentage of patients at AHA established goal blood-pressure at first PCP visit post-hospital discharge and the average blood pressure for enrolled patients at study conclusion, will be compared to the same averages for TCC patients in the six (6) months prior to the establishment of the study who did not participate in any pharmacist-managed hypertension visits. Pharmacist medication interventions will be continually noted across all patients enrolled in the study and reported as an average number of interventions per patient over the course of their transition to primary care.

Results: Not Applicable – Research in Progress.

Implications: The shift of care between practitioners and healthcare settings has the unfortunate potential for leaving patients without the ability or resources to manage their condition(s) in an adequate or timely manner. Outcomes of this study will contribute to a growing body of research on the pharmacist's role in chronic disease state management and transitional care.

527-Transitions of Care at WesternU Health: An Implementation Science Approach. Lieu E, Law A, Schwartzman E, Western University of Health Sciences. Email: elieu@westernu.edu.

Objective: The objectives of this study are 1) to explore the use of an implementation science approach in developing an effective Transitions of Care (TOC) process to optimize quality of care in a family medicine ambulatory care setting and 2) to obtain a needs assessment based on patient perspective on their experiences with TOC in order to improve our service. Background: Implementation science approach is a methodology that can address the gaps in care or process to enhance the evidence-based interventions, such as a TOC service, thereby helping to maximize its desired outcomes and quality of care. There are limited studies that explore utilizing an implementation science approach for TOC interventions.

Method: This study will use the implementation science approach to refine the TOC service at a university medical center ambulatory care clinic which primarily serves low-income patients. The project will begin by identifying barriers within the TOC process and addressing these barriers with suggesting or implementing potential solutions. For example, some of the barriers found in the current TOC program included unclear or missing patient discharge information, low patient response rates, and not fulfilling requirements for billing. Potential solutions to address these barriers include training staff on proper documentation and providing an in-service to providers on proper use of billing codes. In addition, this study will examine objective 2 with use of a prospective, needs assessment survey, and retrospective chart review of patients discharged from hospital for the past 180 days. A sample size of 30 will be collected from the electronic health record reports of patients discharged from inpatient settings. Eligibility to participate include: verbal consent to participate in the patient perspective survey, discharge from an inpatient setting, and return to 1 of the 4 locations (home, domiciliary, rest home, or assisted living) after discharge. The needs assessment is a patient perspective survey with 9 questions regarding patients' TOC experiences and is available in two languages, English and Spanish versions. Data from the survey will be analyzed using descriptive analysis.

Results: We expect our service to demonstrate an effective streamline process in our TOC intervention using an implementation science approach and needs assessment.

528-Impact of a Multistate, Community Pharmacy Resident-Driven Transition of Care Service on Medication Therapy Management Outcomes. Martin L, Chambers K, McCauley L, Martin L, Kroger Health, Woodyard J, Purdue University. Email: lyndi.martin@stores.kroger.com.

Objective: The objective of this study is to measure the impact of a multistate, standardized, resident-driven transition of care (TOC) service on MTM outcomes across the country in 26 chain community pharmacy resident practice sites. Outcomes include enrollment rate, drug therapy problems identified, disease state problems requiring patient education identified, vaccinations provided as a result of the service, and medication synchronization program enrollment rate. The American Society of Health System Pharmacists (ASHP) and American Pharmacists Association (APhA) identify care transitions as a Critical Factor in the Accreditation Standards for Postgraduate Year One (PGY1) Community-Based Pharmacy Residency Programs, indicating it is of utmost importance in the provision of community-based pharmacy residency programs. There are limited studies on TOC programs performed in community pharmacy settings and no literature exists on TOC services provided across the country by pharmacy residents in a standardized manner.

Methods: Pharmacy residents started performing TOC services in 26 chain community pharmacies in 13 states throughout the country in August 2019. As part of this service, each pharmacy resident uses the same TOC process guide and accompanying resources supplied by the chain community pharmacy corporate leadership to facilitate appointments. Resources include an outline of the visit, SOAP note template, patient medication summary, and provider communication form. One-hour appointments are performed once with no mandatory follow up. The TOC appointment focuses on the patient's recent hospitalization discharge summary, changes in their medications, and disease state education. Each resident will identify and document MTM outcomes systematically using the pharmacy prescription processing system and REDCap, a data collection software. Data from TOC services will be collected during October 2019 to February 2020 and analyzed in March 2020. No identifiable participant information will be recorded. Data will be included if the patient is an English-speaking adult 18 years of age or older and completes a TOC appointment within 14 days from hospital or emergency room discharge. Data collected from patients will be excluded if their reason for admission was acute pain management. Demographic information will be obtained to characterize the study population. Descriptive statistics will be used to calculate the mean, standard deviation, and normality of drug therapy problems identified, disease state problems requiring

education identified, and vaccinations provided as a result of this service. Descriptive statistics will also be used to describe frequencies of enrollment and medication synchronization program rates. An IRB application has been submitted to Purdue University's Human Research Protection Program with anticipated approval in October 2019.

Results: Results will be presented at the APhA Annual Meeting.

Conclusions/Implications: Information gathered from this study will describe new evidence to advance pharmacy practice and aims to support community pharmacy residency programs developing TOC services to successfully meet accreditation standards.

529-Pharmacist Implementation of a Transitional Care Program in an Indigent Clinic: A Randomized Controlled Trial Reveals Potential Challenges and Impact on Readmission Rates. McDaniel C, Harris S, Sewell J, Chou C, Auburn University Harrison School of Pharmacy. Email: cnc0027@auburn.edu.

Background/Objective(s): The objectives were to assess the feasibility of implementing a pharmacist-led transitional care program in an indigent clinic with limited resources and evaluate its impact on 30-day readmissions and emergency department (ED) visits of an uninsured population. Uninsured patients are vulnerable during transitions from hospital to home due partly to their limited access to follow-up care. Pharmacists' involvement in post-discharge follow-up has shown potential to decrease readmissions and increase access to care in clinical settings.

Methods: This single-blind, randomized controlled trial was implemented in an indigent clinic from October 2018 to July 2019. Eligible patients (uninsured adults ≥18 years old discharged from a community hospital in East Alabama) referred to the clinic were randomly assigned in a 1:1 ratio to intervention or control group. Within 16 days of discharge, all participants attended an initial pharmacist visit, receiving routine counseling including symptom assessment; were evaluated for readmission risk (LACE), health literacy (Rapid Estimate of Adult Literacy in Medicine-Short Form: REALM-SF), and self-efficacy (General Self-Efficacy: GSE); and scheduled a follow-up appointment with a primary care provider (PCP) to establish care. The intervention group also received medication reconciliation, applicable medical devices (scale, blood pressure cuff, glucometer), and pharmacist follow-up calls at 60-and 90-day post-discharge. The primary end point was 30-day readmission (rates per 1,000 person-days). Other collected patient data included baseline characteristics, primary discharge diagnosis, PCP visit attendance (yes/no), 30-day ED visits, days until first 30-day readmission and ED visit, and patient-level barriers to care. Baseline characteristics were examined using t-tests for continuous variables and chi-square tests for categorical variables. Poisson regression models were used to compare readmission and ED rates between groups. Logistic regression was applied to analyze predictors of 30-day readmissions, adjusting for group allocation, baseline characteristics, and PCP visit attendance.

Results: The majority of 88 study participants (44 in each group) were male (59.1%), African American (56.8%), with an average age of 47 years old. About 61% had moderate readmission risk based on LACE scores. Participants had relatively high self-efficacy (GSE mean=32.26, on a scale of 0-40) and 7-8th grade health literacy (REALM-SF mean=5.56, on a scale of 0-7). Intervention group had a lower readmission rate than control (3.3 vs. 5.5 per 1,000 person-days). Both groups had similar ED visit rates (11.5 vs. 9.9 per 1,000 person-days). After adjusting for covariates, male participants (p=0.040) and those with higher readmission risk scores (p=0.045) were more likely to have readmissions. Barriers to follow-up post-discharge included transportation, accessibility, financial burden, inconsistent telephone communication, and lack of knowledge of the importance of follow-up.

Implications/Conclusions: The study demonstrated the feasibility of pharmacists acting as provider extensions during care transitions in a clinic with limited resources and showed promising results of reducing readmissions. A follow-up study with a large sample size is planned to further assess the impact of transitional care on readmissions among uninsured populations, and it will require strategies to handle challenges and barriers associated with the difficult life circumstances that uninsured populations have to improve their ability to participate in the study.

530-Impact of Inpatient Transitions of Care Pharmacist Interventions on Medicare Readmission Rates. Mercer J, University of Rhode Island, Moniz M, Sylvia E, Fontaine T, Eugenio K, Southcoast Health. Email: janelle_mercer@my.uri.edu

Objective: The aim of this study is to determine the impact that transitions of care (TOC) pharmacist interventions have on Medicare 30-day readmission rates. The average cost of a single hospital readmission is estimated at $13,800, leading to an annual cost of $41 billion. With the price of healthcare continuously on the rise, it has become imperative to identify the best ways to provide better patient outcomes while reducing costs. The role of the pharmacist in an inpatient TOC setting is a relatively new area, the true impacts of which have yet to be determined. It is theorized that when pharmacists are incorporated as part of a TOC team, 30-day readmission rates of Medicare patients are reduced considerably. This study is important in discerning the areas in which pharmacists make the biggest impact to reduce 30-day readmission rates of Medicare patients.

Methods: Data was collected retrospectively from April 1st, 2018 through September 30th, 2018 across three hospital sites with a total of 671 beds. To be included in the study, patients had to have at least one recorded instance of a TOC intervention in their electronic medical record during their hospital stay in the aforementioned timeframe. Those excluded from the study were patients

who left against medical advice (AMA) or who died during their index admission. Only patients who were 65 years of age or older, had original Medicare as insurance, and received either a congestive heart failure (CHF) or chronic obstructive pulmonary disease (COPD) TOC intervention were included in the 30-day readmission analysis. These results were then compared to both the same hospital's 30-day readmission rates as well as the Medicare national averages for the corresponding chronic disease states.

Results: A total of 755 patients met the inclusion criteria. Of these 755 patients, 229 received a COPD-targeted TOC pharmacist intervention and 70 received a CHF-targeted one. Compared to patients in the same timeframe without a TOC intervention at these hospital sites, COPD Medicare patients had a 30-day readmission rate of 22.70%, while CHF Medicare patients had a rate of 23.94%. Post-TOC intervention, 30-day readmission rates were reduced by 3.05% and 6.80% for COPD and CHF patients, respectively. In comparison to the Medicare national average, after a COPD-targeted intervention, 30-day readmission rates were about the same. However, after a CHF-targeted intervention, 30-day readmission rates were lower than the Medicare national average by 4.56%.

Implications/Conclusions: Based on this study, both COPD and CHF-targeted TOC pharmacist interventions make a positive impact on 30-day readmission rates of Medicare patients. These disease state specific interventions did improve the 30-day readmission rates for Medicare patients in this hospital system. Additionally, CHF-related TOC interventions reduce the 30-day readmission rates to well below the Medicare national average. Though more studies are necessary, these results suggest that Medicare patients with a diagnosis of CHF and/or COPD do benefit from an intervention with a pharmacist prior to discharge.

531-Evaluating Older Adult Perceptions of Community Pharmacists and Provided Services as an Aid to Emergency Department Transitions of Care. Merz K, Porter B, The Ohio State University College of Pharmacy, Southerland L, The Ohio State University Wexner Medical Center, Hoyt C, Uptown Pharmacy. Email: merz.62@osu.edu.

Objective: This study aims to evaluate how older adult patients perceive the role of their community pharmacist during the transition home from an acute care setting. The secondary objective is to describe the community pharmacist-provided services utilized by patients during this transition. The role of the community pharmacist continues to evolve as medication therapy management and transitions of care services expand. Specifically, these pharmacist-provided services have shown improvement in clinical outcomes as well as reduction in adverse effects and readmission rates. As a result, pharmacists may also play a critical role in reducing revisit rates in patients discharged from an acute care setting, such as an emergency department. The older adult population in particular is of interest as these patients are at an increased risk for adverse effects and drug-drug interactions. Research regarding older adults' perceptions of the role of the community pharmacist in this transition is limited.

Methods: This is a prospective qualitative research study. Eligible patients include those ≥65 years old who are discharged from an acute care setting with at least one new prescription. In addition, the prescription must be filled following discharge. Potentially eligible patients will be identified and recruited in the acute care setting prior to discharge. A study investigator will follow up to collect patient demographics and assess eligibility and patient interest. If deemed eligible for the study and participant consent is confirmed, the study investigator will conduct a semi-structured interview to investigate the study objectives. Recruitment for the study will continue until saturation of themes is reached. Interviews will be recorded and transcribed for analysis. Data will be analyzed by investigators with support from qualitative data analysis software to reach consensus on major themes.

Results: Results will address stated objectives of the study.

Implications/Conclusions: The results of this study will provide insight into the perception of older adults regarding their community pharmacist and services provided. Results may support further development of effective patient-centered services particularly focused on a patient's transition home. Future research may investigate a collaborative transitions of care service with community pharmacy partners and acute care settings to measure correlation with revisit rates and preventable medication errors.

532-Assessing Discrepancies That Contribute To An Increase In Health-Systems Readmission Rates And the Interruptions of Continuum of Care in Post-Discharge Patients. Nguyen S, Timbol M, Echeverri J, Ali R, Shahbazian A, APhA Academy of Student Pharmacists (APhA-ASP). Email: snguyen17@students.kgi.edu.

Objective:: Transitions between inpatient and home care settings are prone to medication errors related to lack of communication between healthcare providers, inadequate patient education, incomplete medication reconciliation, and the absence of patient involvement in medication management. Moreover, inconsistent care contributes to hospital readmissions of 20% of patients within 30 days of discharge. This project was designed to identify discrepancies that contribute to an increase in readmission rates in hospitals within the San Gabriel Valley. The pharmacist's role in the continuum of care was analyzed in order to assess the need for healthcare professionals to improve post-discharge care and medication management in order to reduce penalties, patient costs, and advance hospital performance.

Methods: A retrospective descriptive observational study was used to determine a continuum of care services to identify the number of discrepancies amongst recently hospitalized patients with a likelihood of readmission. The inclusion of our patient population was assessed by our partnering hospitals in the surrounding San Gabriel Valley area and the willingness of the patient to participate. Individuals who participated in the study provided consent. Exclusion factors included (1) patients who were deceased before being evaluated, (2) patients who refused care, (3) if the patient needed emergency care and (4) if patients could not be contacted. The researchers evaluated a total of 472 high risk patients with disease states including diabetes, heart failure, and COPD. These services

included home visits with medication reconciliation as well as patient interviewing performed by licensed pharmacists. During the home visit a complete assessment was completed by the pharmacist to assess for the presence of 12 discrepancies related to contributing factors in patient comprehension of medication and disease state. These 12 factors include: insufficient/incorrect patient education, insufficient/incorrect patient assessment, lack of consultation, insufficient/incorrect OTC product recommendation, discontinued medications, improper storage, expired medications, incorrect dosing (subtherapeutic/overdose), missing medications, drug-drug interactions/adverse drug reactions, therapeutic duplication, and inappropriate treatment duration. After assessing the patient's condition the pharmacist provided appropriate interventions as well as provided resources to improve adherence to their proper medical regimen.

Results: Of the 472 patients, 100% of the patients had at least one or more discrepancies identified per patient upon medication reconciliation post-discharge. Discrepancies identified in the 472 patients ranged from 4% (n=14) for improper storage to 98% (n=279) for insufficient or incorrect patient education in regards to their treatment and/or disease state. Other areas of concern showed that 23% of patients (n=68) were missing medications and 14% of patients (n=41) had inappropriate dosing for their medications. Discrepancies not commonly seen in practice, including cultural norms, were also observed as an area for improvement and inclusion for patient assessments.

Conclusion: Services provided by pharmacists from inpatient to the patients' home care were helpful in evaluating 12 critical discrepancies and correcting a gap in patient comprehension. This study allowed for the discovery and assessment of various discrepancies which may potentially cause readmissions. While identifying discrepancies and analyzing their designated care as a whole, it was determined that patients were unaware of their resources or had difficulty communicating their lack of understanding with their health care provider. Using inferential statistics, researchers were able to determine that there were several medication related discrepancies that could be avoided by having pharmacists perform in home visits. Identifying these issues can potentially reduce patient costs, avoid readmission rates and penalties, as well as optimize patient care. In conclusion, the results from the transition of care services encouraged patients to communicate with their pharmacy and health care providers in order to improve their therapy outcomes.

533-Assessing Antibiotic Change from the Emergency Department to Inpatient Admission Upon Transition of Care. Patel K, Temple University School of Pharmacy, Tencza E, Blick C, Temple University Hospital. Email: krishna@temple.edu.

Objective: The emergency department (ED) is known to be a fast paced environment where patient follow up can be challenging. Changes in antibiotic regimen at the time of handoff from the ED to inpatient admission represents an unaddressed point on the patient care spectrum at which antibiotic stewardship and patient safety may intersect. The purpose of this study is to determine if the empiric antibiotic regimen chosen in the ED was adequate for culture(s) grown.

Methods: A two-part retrospective quality assurance cohort study was conducted in the ED of a large urban academic teaching institution in Philadelphia, PA. Data was collected utilizing the Epic electronic medical record database from June 2018 to October 2018. Part one of the study included surveys sent to inpatient admitting team prescribers inquiring about antibiotic selection and regimen change. Part two of the study evaluated empiric antibiotic regimen change from the ED upon transition of care to the inpatient admitting team. Our team collected data from 88 adult patients who presented to the ED with suspected infection, cultures ordered, received empiric antibiotic(s) in the ED and upon admission to the inpatient setting, and had completed surveys by the inpatient admitting team physician. Our primary objective was to evaluate the appropriateness of empiric antimicrobial regimen initiated by the Emergency Medicine (EM) team in the ED. Secondary objectives include percentage of correct empiric antibiotic regimen chosen by the inpatient admitting team, antibiotic change related to type of inpatient team (e.g. critical care team vs. medical floor team), rationale for complete empiric antibiotic regimen change upon transition of care, and acquisition of Clostridium difficile infection.

Results: Of the 88 patient cases analyzed, 42/88 (47.7%) patient cases grew out cultures. 31/42 (73.8%) of empiric antibiotic coverage, selected by the EM team, was adequate. Regarding secondary objectives, 31/42 (73.8%) of the antibiotic regimen by the inpatient admitting team was adequate. 5/88 (5.7%) patient cases were transitioned to an intensive care unit upon admission of which ⅗ (60%) were changed by the critical care team. 83/88 (94.3%) patient cases were transitioned to a medical floor upon admission of which 52/83 (62.7%) were changed by the medical floor team. 55/88 (62.5%) patients antibiotic regimens were completely changed. Rationale for complete empiric antibiotic change, by the admitting inpatient team, included 19/55 (34.5%) for broadening coverage, 18/55 (32.7%) for narrowing coverage, 7/55 (12.7%) for concern of resistance, 5/55 (9.1%) for a change in diagnosis and 6/55 (10.9%) were categorized as other (which included physician preference). 1/88 (1.1%) patients tested positive for Clostridium difficile infection.

Conclusion: Streamlined management of antibiotic therapy has been shown to optimize patient care and lower risk of unwanted patient outcomes including resistance. Future studies include implementation of an evidence based guideline, into the ED system, for prescribers to order appropriate empiric antibiotics; assessment of communication between EM and medical teams regarding empiric antibiotic selection at transition of care; and cost analysis to depict the cost of unnecessary antibiotics due to inappropriate changes of antibiotics at transition of care.

534-Impact of a Collaborative Transition of Care Center on Preventing Hospitalizations and Reducing Readmission Rates. Patel R,

Lee Health, Wallace J, University of Florida. Email: rakhi.patel@leehealth.org.

Objective: The purpose of this evaluation is to describe how transitions of care (TOC) clinic visits affect patients' outcomes by examining the hospital admission and readmission rates. To prevent adverse events and readmissions during transitions of care, hospitals have been developing care models with the goal of improving outcomes for their patients. The TOC clinic, a hospital outpatient department, focuses on caring for patients without a primary care provider following an emergency department (ED) visit or hospital admission.

Methods: A retrospective chart review from March 2019 to May 2019 was conducted to collect data on patients 18 years or older who had their initial visit at the TOC clinic following an ED visit or hospital admission within a five-hospital health-system. The primary outcome is to evaluate 30-day hospital admission rates post-ED referral and 30-day hospital readmission rates post-hospital admission. Secondary outcomes include 30-day ED visits, timeliness of care, pharmacist interventions, and the utilization of the outpatient hospital pharmacy after the TOC visit. Patients who did not show up to their visit were not included. This project was approved by the Institutional Review Committee (IRC) as a quality improvement project and is therefore exempt from IRB approval.

Final Results: There were 584 patients included in the analysis. Of these, 213 patients (36%) were referred to the clinic after an ED visit and 371 patients (64%) were referred after a hospital discharge. For the primary outcome, twenty-five of the 213 patients had a hospital admission within 30 days post initial clinic visit, equaling an admission rate of 12%. Thirty-four of the 371 patients had a hospital readmission within 30 days post initial clinic visit equaling a readmission rate of 9%. There were 67 ED visits within 30 days post initial clinic visit among all the patients. The average number of days from hospital or ED discharge to initial clinic visit was 5. The average number of days from initial clinic visit to hospital admission or readmission was 11.7. Of all the patients included in the analysis, 31% attended a follow-up visit at the clinic. There were 353 total interventions identified by the clinic pharmacist for 181 patients. Of the 181 patients requiring interventions the most common interventions identified were as follows; 65% had a medication reconciliation correction, 19% had patient education, 16% needed additional treatment, and 12% needed financial assistance. Of the 251 patients who received prescriptions at the visit, 49% filled their prescription at the onsite pharmacy.

Conclusion: In conclusion, the clinic focuses on optimizing patient care during transition of care to prevent unnecessary hospitalizations. In comparison to the hospital 30-day readmission rate of 15%, the TOC clinic had a lower readmission rate of 9%. Additionally, patients were able to be assessed by a pharmacist who assisted the team in pursuing medication interventions. The results demonstrate the importance of a collaborative, transitions of care based clinic and sets the precedence to incorporate these clinics in every hospital.

535-Impact of Pharmacists' Transitional Home Visits on Hospital Utilization. Pruitt A, Griffin S, Zimmer R, Yang M, Clark D, Hinely M, Wake Forest Baptist Health. Email: avpruitt@wakehealth.edu.

Objective: The objective of this pre-post intervention study is to determine whether the addition of a pharmacist to a transitional home visit team will reduce cumulative 30-day readmission rates at an academic medical center. Hospital utilization is a major concern to healthcare systems throughout the United States. High hospital utilization rates may be linked to the overuse of resources and compromised patient care by healthcare professionals. Metrics such as readmission rates have been shown to be effective in evaluating the improvement in hospital utilization. Collaborative transitional services by physicians, nurses, and pharmacists have been shown to reduce hospital readmissions, reduce emergency department visits, and improve patient outcomes. Pharmacist involvement in patient care during transitional services has been shown to be beneficial in the improvement of these outcomes. However, there is limited data available regarding the benefit of adding pharmacist to a home-based transitional service.

Methods: This study is a single-center pre-post intervention, retrospective study within an academic medical center. Patients seen by the Transitional and Supportive Care program from August 1, 2019 until January 31, 2020 who have had one or more previous hospitalizations will be selected for the study. The purpose of transitional home visits is to bridge patient therapy from hospital discharge to the upcoming primary care provider (PCP) visit. Currently, transitional home visits are performed solely by an advanced practitioner provider. The selected patients who receive transitional home visits will be seen by an advanced practice practitioner and a pharmacist. The transitional home visits will serve as the intervention with an internal control. The primary endpoint is cumulative 30-day readmissions from the date of discharge that qualified the patient for the home visit. Secondary endpoints include the number of emergency department visits, PCP follow-up rates, and pharmacists' interventions. The results will be analyzed using inferential and descriptive statistics.

Preliminary/ Final Results: Research in progress.

Conclusions/ Implications: This study will measure the value of adding a pharmacist to a home-based transitional service. The results may be applicable to organizations that provide home-based transitional services to patients upon discharge from the hospital.

537-Implementation of a Resident-Driven Transitions of Care Service in a Chain Community Pharmacy. Sandiha S, Fava J, Meijer Pharmacy/Wayne State University, DeLor B, Pfizer. Email: stavro.sandiha@meijer.com.

Objective: The primary objective of this study is to determine the impact of a pharmacy resident-led transitions of care (TOC) model on the number of interventions and drug related problems (DRP) identified and resolved during the service time period. The secondary objectives measured include patient-reported 30-day hospital readmissions post-discharge and patient satisfaction with

service provided. TOC is the movement of patients from one healthcare setting to another. This time period is highly vulnerable to medication misadventures, since patients are receiving prescriptions and medication advice from numerous different providers who in most cases are not in consistent communication with each other. Literature suggests that one in five patients experience an adverse event during their transition from hospital to home, ranging in severity of laboratory abnormalities to permanent disability. While many TOC programs have been implemented in hospital systems to improve patient outcomes, decrease readmissions, and improve reimbursement funds, there are lack of studies showing the efficacy and feasibility of this service in a large retail chain pharmacy setting.

Methods: This will be a single site, prospective pilot evaluation, organized and conducted by a community-based PGY1 pharmacy practice resident with the assistance of pharmacy extenders. Those assisting with the study will be provided with screening tools to help identify TOC service-eligible patients within the community setting. Eligible patients include adults at least 18 years of age with a minimum of one chronic disease state. Once enrolled, these patients will then undergo a medication reconciliation with the resident or pharmacy intern either face-to-face or by telephone within 72 hours. During this interview, pertinent information regarding current disease states and medication therapy will be collected using a protocolized approach. The resident or pharmacy intern will contact patients' providers as necessary while conducting a thorough medication review and identifying any potential DRP's and/or clinical interventions. For the primary outcome, DRP's will be collected prospectively and transcribed into a data collection sheet. Secondary outcomes will be collected via phone interview and will include patient reported 30-day readmission and satisfaction with TOC service provided. Data will be analyzed using descriptive statistics.

Preliminary Results: The pilot is scheduled to begin fall 2019. Preliminary data will be available and presented at the APhA2020 Annual Meeting and Exposition in early spring 2020.

Implications/Conclusions: This project has potential to serve as a primer for implementation of larger-scale TOC programs in the chain community setting and further demonstrate the value of the community pharmacist in improving public health.

538-Primary Care Comprehensive Medication Reviews in Cancer Patients with Comorbid Conditions. Thompson A, Azar M, Farris K, University of Michigan College of Pharmacy, Mackler E, Michigan Oncology Quality Consortium. Email: amynt@umich.edu.

Objective: The literature is replete with evidence that lapses in communication between oncology and primary care provide opportunity for improvements in patient outcomes. The purpose of this pilot study was to explore the interventions associated with a comprehensive medication review (CMR) in a cancer patient population with select comorbidities. Ultimately, we wish to establish a best practice with supporting tools for coordination of care between oncology and primary care providers to achieve optimal management and improved outcomes of comorbid illness in patients with cancer.

Methods: Single center, pilot study. Adult patients meeting the following inclusion criteria: receiving both cancer and primary care at Michigan Medicine, receiving curative cancer treatment, and having a comorbid condition of diabetes, hypertension, chronic heart failure, depression, and/or anxiety were eligible to receive a CMR by the primary care clinical pharmacist. Recommendations to optimize therapy were reviewed with the PCP, implemented in a follow-up visit, and documented within the electronic medical record. When deemed appropriate, patients received continued follow-up with the clinical pharmacist for diabetes and/or hypertension management using current collaborative practice agreements.

Results: Twenty-three patients receiving active treatment for their cancer between June and December 2018 were included. We performed CMRs on 12 (52%) of the patients, 2 were not interested, 1 was in the hospital at the time of recruitment and 8 were not reached after numerous attempts. Of the 12 patients receiving a CMR, the average age was 68 years (sd 11.5) and the average number of medications was 7.5 (sd 3.4). The comorbid disease states included hypertension (83%), diabetes (17%), and anxiety/depression (33%). Four (33%) patients required modification to their medications resulting in an addition of 8 medications (OTC/herbal agents 75%, topical/ophthalmic and other agents 12.5% each), deletion of 10 medications (antibiotic/antiviral agents and topical/ophthalmic agents 30% each, OTC/herbal agents 20%, and cardiovascular agents 10%), and adjustment of 4 medications (OTC/herbal, diabetes, topical/ophthalmic, and other agents 25% respectively). Two (17%) patients were identified for continued chronic disease state management by the pharmacist.

Conclusions: One third of active treatment cancer patient who had select comorbid illnesses, had medication changes following a CMR with a primary care pharmacist. In addition, some patients required chronic follow-up for their comorbidity. As we expand this pilot, we plan to include patients receiving palliative therapy and patients who do not currently have a primary care provider at Michigan Medicine.

539-Effect of Enhancing Patient-Provider Communication for Rural Older Adults during Transitions of Care on Patient Self-Efficacy. Yanovich A, McKeirnan K, Neumiller J, College of Pharmacy and Pharmaceutical Sciences, Washington State University. Email: alina.yanovich@wsu.edu.

Objective: The goal of the proposed project is to test the effectiveness of a patient-provider communication toolkit in conjunction with existing transitional care strategies in a rural hospital to improve outcomes in an older adult population with multiple chronic medical conditions (MCMCs) and complex medication regimens. Upon discharge from the hospital, older patients with MCMC are often faced with new prescriptions added to their already complicated medication regimens. During such transitions, older adults may

feel overwhelmed, frustrated, or exhibit a low sense of self-efficacy that can lead to medication nonadherence and be potentially associated with negative clinical outcomes. Previous studies have determined that an effective approach to improving health care experiences and outcomes in such patients is through enhancing patient-provider communication during crucial transitions of care. One approach to assist with this matter is to provide patients with tools and strategies to improve the quality of patient-provider interactions. To enhance communication between patients and providers, our team developed a toolkit, which consists of a series of video vignettes with examples of both negative and positive patient-provider interactions. The vignettes are paired with a conversation card addressing critical points of discussion between the provider and the patient regarding newly added medications.

Methods: A total of 121 patients aged 60 or older will be enrolled. Sampling will be performed to achieve a gender ratio of female to male of 1:1 and racial/ethnic representation corresponding to the general demographics of rural eastern Washington State. Additional inclusion criteria are ability to read/speak/listen and understand English, residing in a rural area, diagnosis with at least 2 chronic medical conditions at baseline, receiving a regimen of at least 5 medications at baseline, with at least 1 medication added during the most recent hospital visit, undergoing transition of care from the hospital, and referral to participate in the study by a health care provider. Participants' feelings of empowerment and sense of involvement in their own care, as well as medication adherence, will be assessed through responses to a standardized Patient Activation Measure-13 (PAM-13) survey. The survey will be administered immediately before and after the toolkit is provided, and again at 30, 60, 90, 180 and 365 days post-hospitalization. Completion of the follow-up survey at varying points of time will allow participants to reflect on the short-and long-term effects of the toolkit intervention on their interactions with providers, sense of self-efficacy, medication adherence, their general health, and self-management of their chronic conditions.

Preliminary Results: Based on results of studies validating the PAM-13 survey, we anticipate a mean 80% increase in self-efficacy from baseline to day 365 post-hospitalization. Participant enrollment is currently pending.

Implications/Conclusions: It is anticipated that incorporation of our toolkit into patient-provider interaction during the transition to the ambulatory care setting from inpatient hospital care will increase participants' medication understanding, compliance and empowerment in own care, leading to a subsequent increase in self-efficacy.

540-Evaluating an Interprofessional Transitions of Care Clinic in a Community Hospital. Zhang X, The Ohio State University, DeWitt J, OhioHealth Riverside Methodist Hospital, Rodis J, The Ohio State University College of Pharmacy. Email: zhang.7155@osu.edu.

Objective: 1) Describe an interprofessional practice model for a Transition of Care clinic in a community hospital, 2) Evaluate the number of patients seen by a pharmacist at the clinic and number and types of interventions performed by a pharmacist, 3) Evaluate the impact of the clinic on re-admission rate of the patient population seen by the clinic.

Methods Transition of care has drawn the focus of many healthcare systems due to the value-based payment models used by the Centers for Medicare and Medicaid Services and other insurance plans that target patient readmission rate. Previous studies have shown that approximately two-thirds of adverse events post-hospital discharge could be attributed to drug-related problems. To improve care transitions and reduce re-admission rates, an interprofessional Transition of Care clinic was established at a community health-system outpatient clinic. This clinic serves patients who were seen by the clinical medicine team, a resident run service, during their hospital stay. These patients were discharged home and deemed high risk for re-admission; thus, they were scheduled in the clinic for follow-up the week following discharge. The interprofessional staff at the clinic includes internal medicine residents, attending physicians who staffed the inpatient service the previous week, a nurse practitioner, medical assistants, and a pharmacy resident. Services provided by pharmacists include gathering a medication history, face-to-face medication reconciliation, patient education, physician consultation on medication interventions, and patient monitoring through the use of clinic or telephonic visits. Pharmacy encounters are documented within the electronic medical record (EMR) utilizing established documentation standards for the institution. Six months after clinic initiation (February 2020), a retrospective review of EMR documentation by the pharmacists will be conducted to report the number of patients seen by a pharmacist as well as number and types of interventions completed. Readmission rates of the patient population seen by the clinical medicine service will be assessed by comparing to the readmission rate the same time last year. Lessons learned through initiation of this clinic with pharmacist involvement will be gathered and reported. Descriptive statistics will be used with frequencies and percentages provided.

Preliminary Results: Data collection ongoing.

Implications/Adaptability: Results of the project will provide insights into the role of pharmacists within a transition of care setting and the impact of an interprofessional transition of care clinic on hospital readmission rate. Lessons learned will guide involvement of a pharmacists within similar clinics to foster expansion of pharmacy services in transitions of care

Workforce and Manpower

541-National Pharmacist Workforce Survey Reports of Discrimination and Harassment in the Pharmacy Workplace. Bakken B, Medical College of Wisconsin School of Pharmacy, Gaither C, University of Minnesota College of Pharmacy. Email: bbakken@mcw.edu.

Objective: The recent increase in political and social movements in the United States has heightened awareness and interest in understanding the experiences and reporting of discrimination and harassment in the workplace and in soceity. In 2018, the United

States Equal Employment Opportunity Commission filed discrimination charges on behalf of 76,418 individuals and harassment charges on behalf of 26,699 individuals. Unfortunately, discrimination and harassment in the workplace are often underreported due to fear of retaliation. Currently, there are no data available in the literature regarding the prevalence of discrimination and harassment in the pharmacy profession in the United States. Objectives: 1. Determine the most common basis for discrimination or types of harassment in the profession of pharmacy. 2. Describe the characteristics of the offender. 3. Determine the likelihood of reporting instances of discrimination or harassment and barriers to reporting. 4. Determine the level of satisfaction with results when discrimination or harassment are reported.

Methods: An electronic survey was distributed by the National Association of Boards of Pharmacy (NABP) via email to a randomized sample of 96,110 licensed pharmacists from all 50 United States using the NABP e-profile system. The survey was disseminated using a 3-contact Dillman approach. The 2019 National Pharmacist Workforce Survey included questions to explore current professional and societal topics of interest. A new battery of questions was included to assess the prevalence of discrimination and harassment in pharmacy, including the basis of discrimination personally experienced, types of harassment observed or experienced, characteristics of the offenders, reporting rates, satisfaction with the outcome of reporting, and reasons for not reporting. Data analyses included descriptive statistics.

Results: Results from the 2019 NPWS indicate the most common forms of discrimination and harassment reported by pharmacists included discrimination on the basis of age (31.3%), gender (29.2%) and race/ethnicity (16.6%). The most common forms of harassment related to hearing demeaning comments related to race/ethnicity (15.7%) and hearing or observing offensive behavior of a sexual nature (13.7%). Over 80% of pharmacists did not report observed/experienced discrimination or harassment to their employer, with over 40.6% citing they “didn’t think it would result in any action” as the reason for not reporting. Of the pharmacists that did report discrimination to their employer, only 8.9% were “very satisfied” with the result of reporting, meanwhile, 56.1% were “very unsatisfied” with the result of reporting. For harassment, 20% were very satisfied and 45.5% were unsatisfied. For discrimination, the offenders’ characteristics most commonly reported by male pharmacists included female supervisors followed by male supervisors, whereas those reported by female pharmacists included male supervisors followed by male customers/patients. Female pharmacists also reported that harassment came from male colleagues and patients while male pharmacists included female colleagues, along with male colleagues and supervisors.

Conclusions: Pharmacy is not exempt from the discrimination and harassment issues prevalent in society. While licensed pharmacists report observing or experiencing discrimination/harassment in the workplace, the majority did not report the discrimination/harassment to their employer. More should be done within the profession to further understand and remedy these issues.

542-An Assessment of Female Pharmacy Graduates in Maryland Compared to National Trends in the United States. Botescu C, University of Maryland School of Pharmacy, Botescu B, Notre Dame of Maryland University School of Pharmacy. Email: cbotescu@umaryland.edu.

Objective: Assess and describe both historic and current representation of female graduates in Maryland pharmacy, compared to national trends.

Methods: This is a retrospective descriptive study assessing the representation of female pharmacy graduates in Maryland from 1940 onward, compared to national pharmacy graduation data in the United States. Two student researchers collected annual graduation data from archived university of maryland school of pharmacy (umsop) yearbooks by counting the number of male and female students in each graduation class from 1940 through 2010. percentage values were calculated to depict male and female representation each year. This local data was then compared to national data available by the American Association of Colleges of Pharmacy (AACP) from 1965 onward. National data prior to 1965 is currently pending by AACP. Archived minutes from Maryland Pharmacists Association (MPhA) annual meetings were collected as documents of UMSOP admission criteria.

Results: Since 1940, there was a relatively steady rise in female representation in Maryland pharmacy, indicated by the rising percent of UMSOP graduating female students. There are two major milestones in female graduates in 1946 and 1987. There was a particularly isolated peak in female graduates in 1946, due to male participation in World War II (WWII). MINUTES FROM THE 1946 MPhA annual meeting then reveal new postwar admission criteria favoring predominantly male wwii veterans; thus explaining the acute decline of female graduates in 1947. The year 1987 marks a turning point where from then onward, the majority of pharmacy graduates every year from UMSOP were women. This can be attributed to a 1980 american pharmacists association (apha) task force on women in pharmacy organized to assess women's impact in pharmacy during the decade ahead. the ultimate 1981 report recommended both state pharmacy associations and pharmacy schools to expand career and leadership opportunities for women during the 1980'S. The national AACP data available from 1965 onward illustrates a similar pattern, although the rise of female graduates over time is relatively more linear compared to Maryland. Conclusion Overall, Maryland pharmacy saw a significant rise and fall of female graduates in 1946-47 as a result of war and post-war admission practices. Although female pharmacy graduates rise steadily over time since then, it is not until 1987 when women represent the majority of maryland pharmacy graduates every year onward. This may be attributed to the national initiative by apha's 1981 task force on women in pharmacy report. Understanding the causes of both these trends is imperative, as they demonstrate the significant influence of both state and national pharmacy associations on the future of pharmacy. Both MPhA and APhA Through their initiatives shaped female representation among

graduates, and thus the profession. With more women working today than ever before, professional organization involvement will continue to evolve to meet new arising challenges such as empowering women to pursue more leadership opportunities and addressing paid family leave. The broader implications of this conclusion can be extended toward pursuing other goals for the profession, such as provider status.

543-It is Really Time to Address Pharmacists' Quality of Work Life: Results from the 2019 National Pharmacy Workforce Survey. Gatiher C, University of Minnesota, College of Pharmacy-. Email: cgaither@umn.edu.

Objective: The National Pharmacist Workforce Surveys have collected data on pharmacists' quality of work life since 2000. During the past several years, numerous reports of increasing job stress and workload and decreasing staffing and the ability to change jobs have been reported. Objectives The objective of this study was to examine the quality of pharmacists' work life by investigating reported changes in the work place over the past year, ratings of workload, work-home conflict, job satisfaction, organizational commitment, home-work conflict and control in the work environment and job stress by different practice settings.

Methods: Data were obtained via the 2019 National Pharmacist Workforce Survey (NPWS). An electronic survey link was sent to a random sample of 96,110 licensed U.S. pharmacists using a 3-contact Dillman approach. Data were collected using the Qualtrics survey platform for administration. Changes in the work places were measured using a response format of decreased, increased or stayed the same. Workload ratings and changes were measured on 5-pont Likert-type scales. Work-home conflict, home-work conflict (1 item each) and organizational commitment (2-items) were measured with 4-point Likert-type scales with 1 = strongly disagree to 4 = strongly agree. Job stress (5-items) was measured a 5 point Likert type scale (1=not at all stressful to 4 highly stressful). Control in the work environment (3-items) and job satisfaction were measured with a 4-point scales (0=none to 3= a lot and 1=very dissatisfied to 4= very satisfied; respectively). Pharmacists were asked to indicate their practice setting and data were analyzed using descriptive statistics.

Results: Responses were received from 5,467 individuals. Over the past year, feelings of job stress increased greatly in chain (86%) and job satisfaction decreased the most (74%) in this area. Turnover was also highest in this sector. The most satisfied sector was other non-patient care (79%), followed by ambulatory care (78%) and hospital (74%). Having so much work to do caused the most stress in chain (75%) and supermarket pharmacy (62%). Over 50% of the pharmacists in chain and mass merchandisers feared that a patient would be harmed by medication errors.

Conclusions and Implications: The 2019 Pharmacist Workforce Survey confirmed findings of earlier reports related to pharmacist work life. All interested parties must work diligently to address these issues to address these issues for pharmacists and their patients.

544-Resilience Reimagined: Where is the Power? Hillman L, Gaither C, Schommer J, University of Minnesota, College of Pharmacy. Email: hill0667@umn.edu.

Objective: Pharmacists' well-being is an urgent and growing concern. Resilience is recognized as the ability to bounce back, cope and adapt to new situations in the face of adversity. While often viewed as an individual concept, an individual is bound by the systems in which they exist. New insights can be gleaned from a sociological perspective that considers the relationship between the agency of the individual and the power of the social structure. According to Karl Marx, one of the most influential sociologists, social order in capitalism, the nature of our current health care system, is underpinned by economic relationships. This structure leads to inevitable class conflict in order to maintain power. Power is held by those with the resources. While highly criticized and simply applied here, it has useful concepts that serve to shift the gaze to broader research and policy approaches. The purpose of this analysis is to expound on descriptive themes previously generated from concepts related to resilience in order to frame the concept of resilience outside of the individual. The data here are examined for insight into conflict and power structures at play. Objectives 1. Describe how pharmacists and pharmacy students describe satisfaction, stressors, and needs in their professional life. 2. Examine the views and perceptions of individual's descriptions for subthemes of conflict and power.

Methods: A generic qualitative design was conducted consisting of ten open-ended questions as part of an on-line survey hosted by the American Pharmacist's Association from November to December 2018. The focus is on descriptions of what people experience and how it is that they experience it. For analysis, text was read holistically by multiple team members then coded directly. Themes were generated then operationalized with descriptive definitions from the text. Marxist theory was used to guide analysis of subthemes.

Results: Data were collected from 380 pharmacists and 332 student pharmacists who responded. Pharmacists gain satisfaction and fulfillment by contributing to society by helping patients, mentoring students, and advancing the profession. Main causes of stress include time management and organizational management while needs include freedom to pursue interests. Conflict was evident in the ability to attain fulfillment due to lack of power. Power dynamics were revealed in three areas reflective of larger social structures: [Organizational] Pharmacist and the Employer [Professional] Pharmacist and the Discipline of Medicine [Societal] Pharmacist and the Patient/Consumer.

Conclusions and Implications: As individuals, pharmacists desire feeling valued, relationships and autonomy in their work. It is unclear if they are able to get these needs met within the current structure and within their understanding of that structure. A critical gaze into how pharmacy systems function in society today and the impacts on the individuals trained for pharmacy today may offer

opportunities to see the problems, and thus the solutions, differently. Future research should strongly consider including sociological theory and perspectives to be inclusive of the agency of the individual as well as the power of the system and areas of conflict, and therefore, new possibilities for insight and change.

5**45-Snapshot of Unemployed Pharmacists from the 2019 National Pharmacy Workforce Survey.** Kreling D, University of Wisconsin-Madison, Schommer J, University of Minnesota. Email: david.kreling@wisc.edu.

Objective: Periodically, national surveys of pharmacists have been conducted to identify workforce parameters and characteristics of the pharmacist workforce. Each survey iteration has identified that a segment of the pharmacist workforce is unemployed. Those surveys have quantified the proportion of unemployed pharmacists and whether or not they were seeking a job in pharmacy. Generally, the rate of unemployed pharmacists has been low, but there was an uptick in the 2014 survey results (3.9%, up from 2.6 and 2.7% rates in 2004 and 2009 respectively). With increased numbers of pharmacy schools and graduates since the early 2000s, the balance of supply and demand for pharmacists may be shifting, with possible consequences on unemployment among pharmacists. In the most recent national workforce survey, some additional questions were included to probe more about unemployed pharmacists and their situations. Objectives Our objective was to determine the current rate of unemployment in the pharmacy workforce and describe some characteristics and parameters of the cohort of pharmacists that are unemployed.

Methods: Data were obtained via the 2019 National Pharmacist Workforce Survey (NPWS). An electronic survey link was sent to a random sample of 96,110 licensed U.S. pharmacists using a 3-contact Dillman approach. Data were collected using the Qualtrics survey platform for administration with branching for follow-up questions depending on the response to an item at the start of the survey about the respondent's current employment status. Follow-up questions focused on how long the respondent had been unemployed, whether the decision to be unemployed was voluntary or not, and clarifying the respondent's posture toward their unemployment (seeking or not seeking a job).

Results: Among the 5,467 total usable (complete) survey responses, 267 (4.9%) or pharmacists reported being unemployed, with women comprising nearly two-thirds of these unemployed pharmacists. The unemployment rate for men and women pharmacists were similar (4.7% and 5.0% respectively). Among black pharmacists, the unemployment rate was notably higher than other race/ethnicity groups. (Comparing men and women unemployed pharmacists revealed the men were slightly older and had worked longer before they were unemployed, but the women had longer duration of unemployment. Nearly 40% of unemployed pharmacists left their jobs voluntarily and a slightly higher percent of women left the pharmacy workforce voluntarily based on workplace or personal factors. Over 75 percent of the unemployed pharmacists were seeking a job in pharmacy, some pursuing their first job. Approximately 8 percent were seeking a job outside of pharmacy and nearly twice as many were not seeking any employment. For a small number of respondents that never entered the workforce as a pharmacist, most reported being a recent graduate or not able to find a position as reasons for their unemployed status. Conclusions and Implications Some differences are present in the situations and characteristics of unemployed men and women pharmacists. Although most unemployed pharmacists are seeking a job, some are searching outside of pharmacy or not at all, potentially related to voluntarily leaving the workforce due to workplace factors or personal reasons.

546-Pharmacist Contributions to the U.S. Health Care System Reported in the 2009, 2014, and 2019 National Pharmacist Workforce Surveys. Schommer J, Gaither C, University of Minnesota, Doucette W, University of Iowas, Witry M, University of Iowa, Arya V, St. John's University, Bakken B, Medical College of Wisconsin, Kreling D, Mott D, University of Wisconsin -Madison. Email: schom010@umn.edu.

Objective: Findings from the 2009 and 2014 National Pharmacist Workforce Surveys showed that approximately 40% of U.S. pharmacists devoted their time primarily to medication providing, 40% contributed a significant portion of their time to patient care service provision, and the remaining 20% contributed most of their time to other health-system improvement activities. The objective of this study was to characterize the U.S. pharmacist workforce into segments based on the proportion of time they spend in medication providing and patient care services and compare changes in these segments between 2009, 2014 and 2019.

Methods: Data from the 2009 (n = 1,200), 2014 (n = 1,382) and 2019 (n = 4,766) National Pharmacist Workforce Surveys were analyzed. For inclusion in analysis, respondents needed to report both their percent time devoted to medication providing and to patient care services. Medication providing included preparing, distributing and administering medication products, including associated professional services. Patient care services were professional services designed for assessing and evaluating medication-related needs, monitoring and adjusting patient's treatments, and other services designed for patient care management. For each year, pharmacist segments were identified using a two-step cluster analysis. Descriptive statistics were used for describing segment characteristics.

Results: For each year, five segments of pharmacists were identified. The proportions of pharmacists in each segment for the three surveys (2009, 2014, 2019) were: (1) Medication Providers (41%, 40%, 34%), (2) Medication Providers who also Provide Patient Care (25%, 22%, 25%), (3) Other Activity Pharmacists (16%, 18%, 14%), (4) Patient Care Providers who also Provide Medication (12%, 13%, 15%), and (5) Patient Care Providers (6%, 7%, 12%). In 2019, Other Activity Pharmacists worked over 45 hours per week, on average, with 12 of these hours worked remotely. Patient Care Providers worked 41 hours per week, on average, with six of these hours worked remotely. Medication Providers worked less than 40 hours per week, on average, with just one of these hours worked

remotely. Regarding the number of patients with whom a respondent interacted on a typical day, Medication Providers reported 18 per day, Patient Care Providers reported 11 per day, and Other Activity Pharmacists reported 6 per day. In 2009, 8% of Patient Care Providers worked in a setting that was not licensed as a pharmacy. In 2019, this grew to 17%.

Implications/Conclusions: In 2019, 34% of U.S. pharmacists devoted their time primarily to medication providing (compared to 40% in 2009 and 2014), 52% contributed a significant portion of their time to patient care service provision (compared to 40% in 2009 and 2014), and the remaining 14% contributed most of their time to other health-system improvement activities. Distinguishing characteristics of the segments suggest that recent growth in the pharmacist workforce has been in patient care services, often times provided through remote means in organizations that are not licensed as pharmacies. The findings have implications for pharmacist education and pharmacist labor monitoring. A noteworthy limitation is that the 2019 data were collected via online survey versus mail surveys in 2009 and 2014.

547-A National Survey of Pharmacist Burnout and Engagement Measured Using the Professional Fulfillment Index. Witry M, Doucette W, University of Iowa College of Pharmacy, Gaither C, University of Minnesota College of Pharmacy, Schommer J, University of Minnesota, Arya V, St. John's University, Bakken B, Medical College of Wisconsin, Kreling D, Mott D, University of Wisconsin – Madison School of Pharmacy. Email: matthew-witry@uiowa.edu.

Objective: Professional Burnout is a relevant topic in pharmacy as it can be associated with work dissatisfaction, turnover, and the quality of patient interaction. Burnout, however, is more complex than simply working long hours. The Professional Fulfillment Index (PFI) is a newly developed multi-dimensional measure of professional burnout and fulfillment. The objective of this study was to describe pharmacist burnout and fulfillment for a national sample of pharmacists using the PFI.

Methods: This research is from the 2019 National Pharmacist Workforce Survey (NPWS). An electronic survey link was sent to a random sample of 96,110 licensed U.S. pharmacists using a 3-contact Dillman approach. Variables for the analysis included the 16-item PFI which uses 5-point scales to measure 3 dimensions of burnout: interpersonal disengagement, work exhaustion, and personal fulfillment. Descriptive statistics were calculated for PFI items and demographic characteristics. Reliability for each of the 3 sub-scales was calculated using Cronbach's Alpha. Three multiple linear regressions were performed using age, gender, years with current employer, and work setting as independent variables and each of the 3 PFI dimensions as dependent variables. Correlations were calculated between each of the 3 PFI dimensions and a 5-point item assessing the respondent's reported likelihood to leave their employer in the next year (1=very unlikely to 5=very likely).

Results: There were 4,715 usable responses for the PFI. On average, pharmacists using 5-point scales reported moderate levels of professional fulfillment (mean=3.05, SD=1.19) and work exhaustion (mean=2.83, SD=1.24). The most favorable professional fulfillment item was that over half (53.2%) reported positively that their work is meaningful to them. For work exhaustion, 32% and 33% reported 'a lot or totally' for feeling emotionally and physically exhausted at work, respectively. Interpersonal disengagement was less prevalent in this sample (mean=2.13, SD=1.12), with only 13.4% reporting 'a lot or totally' less connected with their patients. Reliabilities for each subscale were 0.92. Among community pharmacy settings, independent and small chain pharmacists reported lower work exhaustion and higher professional fulfillment compared to larger chains. When comparing all pharmacy settings, however, the regression analyses showed community pharmacists overall had PFI ratings consistent with greater work exhaustion, greater interpersonal disengagement, and less professional fulfillment compared to pharmacists practicing in hospitals and other settings ($p<.001$). Overall, pharmacists with greater work exhaustion, greater interpersonal disengagement, and less professional fulfillment reported a significantly higher likelihood they would leave their job in the next year ($p<.001$).

Conclusions: Pharmacists expressed burnout across pharmacy settings, particularly related to work exhaustion and a lack of professional fulfillment. Community pharmacists practicing in larger chain settings had scores on the PFI most consistent with high levels of professional burnout. Pharmacists with greater burnout also reported being more likely to leave their job in the next year. Reducing burnout appears meaningful for promoting pharmacist retention.

548–Value of Board Certification Among Employers of Pharmacists. Dopheide J, Goldenshteyn F, Lou M, University of Southern California Email: goldenshteyn.f@gmail.com

Background/Objectives: This study aims to report the extent of pharmacy job postings that identify board certification as a desired credential and those who do not list such preferences. Additionally, reasons behind preferring/requiring board certification will be described. The work force of board certified pharmacists is growing, increasing from 7,500 pharmacists in 2007 to more than 35,000 pharmacists in 2017. Board certification in pharmacy denotes specialized knowledge and expertise in providing person-centered care and is seen as an important quality metric. A number of health systems, practice settings, and national pharmacy organizations recognize board certification as a qualifying credential for advanced practice. The pharmacy profession has extensively promoted the value of board certification, yet the impact of board certification on employment opportunities for pharmacist specialists is largely unknown.

Methods: A national search for non-retail active pharmacy job postings from November 16, 2018 to March 8, 2019 was performed by reviewing websites and attending conferences. For each listing, data on the status of preferred/required or neither for board certification, type of specialty, and the practice setting was recorded. Each employer listing a preference or requirement for board certification was asked to complete a questionnaire to qualitatively measure reasons for preferring or requiring certification.

Final Results: Jobs with a predominantly clinical component were more likely to prefer or require board certification (53% vs 27% no clinical component). When listed as a preference or requirement, the board certification most often requested was pharmacotherapy, followed by oncology and psychiatry. According to an employer questionnaire, 98% of employers who preferred board certification and 79% of employers who required board certification believed credentialing verified competence in a specialty practice ($p = 0.03$) and ensured acquisition of knowledge and skills within the specialized field ($p = 0.03$).

Conclusions/Implications: Pharmacy employers are more likely to prefer or require board certification for positions with predominant clinical responsibilities.