INNOVATIONS IN PHARMACY TRAINING AND PRACTICE TO ADVANCE PATIENT CARE: A WORKSHOP

MAY 29-30, 2025

National Academies of Sciences, Engineering, and Medicine
500 Fifth ST NW
Washington, DC 20001

FUTURE OF PHARMACY ABSTRACT BOOK

NATIONAL ACADEMIES Sciences Engineering Medicine

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FUTURE OF PHARMACY

ABOUT

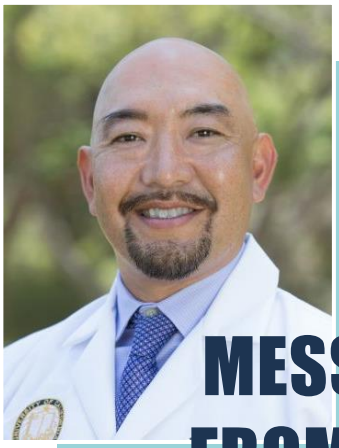
The May 29 Poster Sessions are aimed to recognize ongoing efforts in pharmacy research and provide subject matter experts attending the workshop an opportunity to showcase their work. Reflecting the workshop's goal of shaping the future of pharmacy, abstracts were solicited within one of five pillars of the theme: 1.) Meeting the health needs of individual patients and populations; 2.) Developing an expanded workforce; 3.) Attracting potential pharmacy students into next generation training programs; 4.) Creating a financially stable workforce that is resilient and "future-proof" to dynamic system changes; and 5.) Prioritizing the well-being of the pharmacy workforce by creating policies to mitigate burn-out.

We used a multi-reviewer process to select abstracts based on quality of study, significance, presence of completed study findings, and relevance to the workshop theme. Based on these criteria, accepted abstracts were divided into three groups: moderated poster, unmoderated poster, or included abstract into this book. The unexpectedly large number of submissions we received reflects the high level of enthusiasm surrounding the future of pharmacy and gave us an encouraging sign of future innovations contributing to the advancement of the profession. Additionally, we were inspired by the breath of scope—practice (community, ambulatory care, inpatient interdisciplinary teams), administrative, and academia—representing an impressive range of areas within the profession. We want to acknowledge and thank everyone who submitted an abstract. Your research and innovative ideas are important to the scientific community and will help shape important conversations at the workshop!

Sincerely,

Oluwaranti Akiyode, PharmD
Planning Committee Member

Suzanne Harris, PharmD, BCPP, CPP
Planning Committee Member



MESSAGE FROM THE CHAIR

"I'd like to express special thanks and my deep appreciation to our poster session organizers, Dr. Akiyode and Dr. Harris, for their time and dedication. I also extend my gratitude to the committee members that assisted with abstract review and Academies' staff for all their efforts. Thank you to the authors of selected abstracts. Your contributions reflect the depth and diversity in the field of pharmacy. I look forward to meeting you at the workshop. Congratulations!"

Jonathan H. Watanabe PharmD, MS, PhD, BCGP

MAY 29 POSTER SESSIONS

National Academies Keck
Atrium Level (3rd Floor)

Session 1 (Unmoderated)
12:00pm-1:15 pm ET
Session 2 (Moderated):
5:30pm-7:00pm ET

Session II: 5:30PM – 7:00PM
MODERATED POSTERS (RECEPTION)
Presenter at meeting are either bolded or listed as first author.

R-1	Rana Amayreh, MS[1], Jean-Venable "Kelly" R. Goode, PharmD, BCPS, FAPhA, FCCP[1], Maria Thomson, PhD[1], Vasco M. Pontinha, PhD, MPharm[1], Tana Kaefer, PharmD[2], Teresa M. Salgado, PhD, MPharm[1] 1. Department of Pharmacotherapy and Outcomes Science, School of Pharmacy, Virginia Commonwealth University School of Pharmacy 2. Bremo Pharmacy
	Contextual Factors affecting Statewide Protocol Implementation Among Community-based Pharmacists in Virginia. Statewide protocols authorize pharmacists to provide clinical services without a physician's order, expanding access to care for patients. Virginia has approved protocols for test to treat, naloxone, hormonal contraception, and other services, yet their implementation in community settings remains variable. This study aimed to explore contextual factors affecting community-based pharmacists' ability to implement statewide protocols in Virginia. Methods. Descriptive, qualitative study using semi-structured interviews with community-based pharmacists in Virginia. Participants were recruited through purposive sampling to identify information-rich cases while ensuring representation across practice settings (i.e., independent, chain, urban, rural). Interviews were guided by the Consolidated Framework for Implementation Research (CFIR) 2.0 to systematically explore factors affecting protocol implementation. Interviews were recorded, transcribed verbatim, and thematically analyzed using NVIVO 15. Themes were matched to the corresponding CFIR domains and constructs. Results Twelve pharmacists participated. Two-thirds were between 30-49 years (66%), with experience ranging from new graduates with < 5 years of experience (33%) to >20 years of practice (33%), and representing urban (17%), suburban (50%), and rural (33%) settings. Themes identified under the innovation domain included: clear protocol guidelines (innovation design), lower cost compared to traditional care (innovation relative advantage), and protocol requirements varying by service (innovation complexity). Outer setting domain comprised eligibility barriers (policies and laws), limited access to clinical data (local conditions), and insurance reimbursement issues (financing). Inner setting domain barriers included time constraints (available resources) and workflow disruption (compatibility), while supportive workplace (culture) served as a facilitator. Individual domain factors included technician willingness to embrace expanded roles, and pharmacist liability concerns (motivation), patient awareness gaps (innovation recipients). Implementation process domain revealed independent pharmacies demonstrating greater flexibility compared to chain pharmacies with corporate policy constraints. Implications. Successful implementation of statewide protocols requires addressing multiple barriers at the system, practice, and individual levels. Future implementation strategies should focus on developing clear implementation toolkits, fostering supportive workplace environments, providing streamlined protocol guidance, and improving public awareness of pharmacist-provided services. Developing tailored implementation strategies that address the unique

	challenges of independent and chain pharmacy settings is essential for optimizing protocol adoption across practice environments.
R-2	Melissa E. Badowski, PharmD, MPH, FCCP, BCIDP, BCPS, FIDSA, AAHIVP, Juliana Chan, PharmD, Julio Rebolledo, Pharm.D, BCPS, BC-ADM, AE-C, Emily Drwiega, PharmD, BCIDP, BCPS, AAHIVP, Blake Max, PharmD University of Illinois, Retzky College of Pharmacy
	Bridging the Gap in Correctional Healthcare via Telemedicine For justice-involved individuals, healthcare at correctional facilities has not always been prioritized, accessible, or delivered consistently. For instance, prior to the implementation of telemedicine for the management of HIV in the Illinois Department of Corrections (IDOC), merely 50% of individuals were virologically suppressed. The Illinois Department of Corrections entered into an interagency agreement with the University of Illinois Hospital and Health Sciences System to deliver multidisciplinary care for HIV, hepatitis c, and diabetes to 26 prisons across the State of Illinois. Objectives/Purpose: The goal of this program was to expand proper medication utilization, medication education, and medical access to subspecialty care through the utilization of telemedicine while improving clinical outcomes in justice-involved individuals. Methods: A multidisciplinary team composed of pharmacists (clinical, dispensing), pharmacy technicians, providers (medical doctors, advanced practice registered nurses), social workers, outreach workers, and nurses managed patients living with HIV (2010 – present), hepatitis C (2010 – present), and diabetes (2023 – present) through the provision of telemedicine. Both collaborative care and pharmacist-led models of care were utilized in providing care to justice-involved patients. Antiretroviral therapy and hepatitis C and diabetes treatments were dispensed by our on-site pharmacy to each prison. Retrospective data was collected for the HIV and hepatitis C programs as the diabetes program was newly implemented. Results/Outcomes: Since the inception of our telemedicine intervention, more than 3,000 justice-involved individuals living with HIV received care. Of those receiving treatment, 99% were virologically suppressed with an HIV-1 RNA < 50 copies/mL. Almost 2,000 justice-involved individuals in the state of Illinois received treatment for hepatitis C and 98% of individuals who received treatment achieved sustained virologic response in the post-direct acting antiviral era. Alone in the first year of the diabetes expansion program, 475 new patients entered into subspecialty care with additional prisons still receiving on-boarding for patients. Through the provision of this program, more than 100,000 prescriptions were generated and dispensed. Significance/Implications/Relevance: Not only did the provision of telemedicine achieve sustainable clinical outcomes in justice-involved individuals living with HIV and/or hepatitis C in the IDOC, but through the success of this model, it expanded access of care for those living with diabetes. This model also generated a new line of funding through the generation of prescriptions for HIV, hepatitis C, and diabetes treatments. Furthermore, this provided a mechanism to train pharmacy-learners to be practice-ready to provide direct patient care to justice-involved patients while utilizing telemedicine, areas of care underrepresented in current pharmacy training.
R-3	Jeffrey P. Bratberg, PharmD, FAPhA; Stephen A. Martin, MD, FASAM; Elizabeth B. Ryan, MD; Zachary A. Siegel

	University of Rhode Island College of Pharmacy
	Expanding Access to all Buprenorphine Formulations in Community Pharmacies Can Help Retain Patients in Care and Stabilize the Pharmacist Workforce People who seek buprenorphine for opioid use disorder(OUD) are unable to access it due to geographic, societal, financial, and policy barriers. Long-acting injectable buprenorphine (LAIB) formulations are administered in a limited number of emergency departments, carceral, and outpatient care settings. Community pharmacies are low-barrier locations for starting and maintaining people on buprenorphine. Collaborative addiction care models have shown that pharmacists, providers, and patients benefit from convenient locations, enhanced communication, and increased opportunities to connect patients to other services. Even though all buprenorphine formulations can be prescribed from any DEA-registered provider, pharmacists and their patients with OUD face uncertainty in initiating and maintaining access to LAIB due to pharmacy policy barriers. Purpose: While pharmacists can administer vaccines in every state, policies on controlled substance medication administration by pharmacists vary. We present the first analysis of state policies on LAIB administration by pharmacists. Methods: As part of a grant from the Foundation for Opioid Response Efforts (FORE) to the University of Rhode Island, the Legislation Analysis and Public Policy Association (LAPPA) was contracted to conduct research, review, and analyze laws and regulations in the 50 states, Puerto Rico (PR), and the District of Columbia (DC) regarding several aspects of pharmacist-managed buprenorphine. LAPPA used the Westlaw research database to obtain and collate information whether a pharmacist can prescribe and/or administer buprenorphine, either independently or under a collaborative practice agreement (CPA) between July and October 2024. LAPPA's analysis resulted in three potential answers: yes, no, or unclear. Unclear meant that the available information could support either a "yes" or a "no" answer, depending on interpretation. Results: Twenty-four (24) states permit pharmacists to administer buprenorphine outside of a CPA. In ten (10) states, the answer is unclear, and in seven (7) states and DC, pharmacists cannot administer buprenorphine. Eleven (11) states expressly permit pharmacist administration of injectable buprenorphine under a CPA. In thirty (30) states and DC, their CPA provisions do not clearly authorize pharmacists to administer buprenorphine. Two (2) states have policies that limit which disease states or medications are permitted in CPA's and do not permit buprenorphine administration. Implications: The future of pharmacy includes pharmacists administering LAIB—under CPAs or independently—in order to increase patient access to convenient formulations and solidify pharmacy's role in addiction treatment. Advocacy for regulatory or legislative actions are needed to clarify and expand pharmacist medication administration policies to include long-acting injectable buprenorphine formulations in all states.
R-4	Emily Casey, PharmD, Jacob Radcliff, PharmD, BCPS, Tanya Uritsky, PharmD, BCPP Hospital of the University of Pennsylvania
	Clinical and Financial Impact of Inpatient Pain Management Pharmacy Specialists

	Clinical pharmacists are effective members of inpatient Pain Management, Palliative Care, and Addiction Medicine teams. They provide direct patient care and offer comprehensive medication therapy management, patient and team education, and work to prevent adverse drug events. Objectives/Purpose: Describe the impact of two Pain Management Clinical Pharmacy Specialists providing direct patient care on inpatient subspecialty consulting teams. Methods: Two Pain Management Clinical Pharmacy Specialists, one working in palliative care and one working in addiction, tracked patient interventions for 1 month. The interventions were categorized into one of eleven types (EX: Addition of medication, adverse drug event prevention, etc.). Each intervention type was assigned a cost value based on existing data. Results/Outcome: Over a 1-month period the Addiction Medicine pharmacist recommended 303 interventions over 72 encounters and the Palliative Care pharmacist recommended 374 interventions over 195 encounters. When extrapolated out over one year, these valued over $600, 000 respectively with each Pain Pharmacy Specialist providing significant value to the hospital. The most common intervention type was Addition of Medication (30%) and Therapeutic Dose Adjustment (29.9%). Significance/Implications/Relevance: Pain Management Clinical Pharmacy Specialists provide direct patient care which provides significant clinical and financial benefits. Their interventions improve patient outcomes, prevent adverse events, increase clinical acumen of medical teams, and therefore provide value to the hospital.
R-5	Tram B. Cat, PharmD, FCSHP Joel W. Gonzales, Lauren Anderson, M.Ed., Sharon Youmans, PharmD, MPH, FAPhA University of California, San Francisco (UCSF) School of Pharmacy
	UCSF School of Pharmacy Interprofessional Health Post-Baccalaureate Certificate Program The Interprofessional Health Post-Baccalaureate Certificate Program at UCSF is a yearlong academic experience designed for prospective pharmacy students who need to strengthen their academic foundation and develop their professional and personal growth. We encourage applicants from disadvantaged backgrounds, underserved communities, and historically underrepresented groups in pharmacy. Purpose The Post-Baccalaureate Certificate Program aims to strengthen prospective pharmacy students' academic foundation and equip them with the tools needed to be competitive applicants for pharmacy school. Methods Applicants to the Post-Baccalaureate Certificate Program are aspiring pharmacy students who face challenges in their academic performance or professional experience. This program provides them with the opportunity to strengthen their educational preparation and become more competitive applicants. The selection process requires a program application, academic transcripts, and a resume. After an initial review, selected students are invited for an interview, and successful candidates are admitted. Key components of the program include: two semesters of upper-division science coursework related to pharmacy, personalized support in preparing pharmacy school applications, workshops focused on academic and professional development, seminars on topics in health care and the pharmacy profession, regular meetings with School of Pharmacy faculty and staff to monitor progress, Continuous Quality Improvement (CQI) projects completed by interprofessional (pharmacy, medicine, and dentistry) student teams.

	Results The Post-Baccalaureate program was launched in August 2010, and since then, 54 (96%) students have completed it. The acceptance rate into a pharmacy school is 85%, with 74% admitted to UCSF School of Pharmacy. The first PharmD graduate was from the Class of 2016. Post-Baccalaureate students have completed numerous CQI projects with significant potential health system and patient care impacts. Notable projects have included: improving antibiotic administration, reduction of hospital acquired infections, and improved patient satisfaction. Significance Our program has been transformative for students, offering them the opportunity to learn in an interprofessional environment alongside dentistry and medicine. Participants have gained a deeper understanding of the pharmacy profession and career opportunities. Further, the program provides valuable exposure to a graduate-level educational setting, easing their transition to a professional program. The program also benefits the school, providing the UCSF Admissions Committee with valuable insight into each student's potential while offering enrolled PharmD students the opportunity to mentor post-baccalaureate participants. Ultimately, the program plays a key role in advancing the school's commitment to training a diverse pharmacy workforce.
R-6	Wendy C. Cox, PharmD; Jana Smith, MA; Leah Pompey, MS; Carla Y. White, BS, RPh The University of North Carolina at Chapel Hill Eshleman School of Pharmacy
	Enhancing Pharmacy School Recruitment: Impact of Early Assurance Programs and Summer Outreach Initiatives In recent years, applications to U.S. schools of pharmacy have declined, with a slight increase in applications over the past two years. To address the overall decline and increase the number of applicants from North Carolina and historically underrepresented backgrounds, the UNC Eshelman School of Pharmacy has enhanced its recruitment efforts to focus on these priorities. Objectives/Purpose To describe two targeted recruitment initiatives aimed at increasing the number of applicants to the UNC Eshelman School of Pharmacy. Methods Early Assurance Programs (EAPs) were established in collaboration with nine UNC System universities across the state of North Carolina over a five-year period. Once a student is accepted to the EAP, these programs provide students with an early assurance of admission to the Doctor of Pharmacy program (PharmD), contingent upon meeting and maintaining specific prerequisite requirements. The success of these programs relies on strong partnerships with participating universities and a mutually beneficial approach to student development. Additionally, a summer program, the Emerging Students of Pharmacy, was launched with funding from the McKesson Foundation to engage historically underrepresented students. Initially designed as a one-day experience, the program expanded in its second year to a three-day, two-night format. The summer program introduces students to the pharmacy profession, highlighting diverse career pathways and the evolving roles of pharmacists in healthcare. Results/Outcomes The expansion of recruitment efforts, particularly through the EAPs and summer program has led to an increase in the number of students from these programs applying to the School of Pharmacy. Since 2021, the number of students matriculating into the PharmD program from the EAP has increased to 21 students in 2025 (~14% of the entering class) and is expected to rise as each program matures. Notably, the Emerging Students of Pharmacy summer program has yielded promising outcomes: 37% (7 of 19) of participants in the

	June 2023 one-day program applied and matriculated, while 33% (9 of 27) of participants in the June 2024 three-day summer program applied and were admitted (matriculation pending for fall 2025). Most of these students identify as members of underrepresented minority groups. Significance/Implications/Relevance These targeted recruitment initiatives have had a measurable impact on increasing applications and admissions, particularly among students from North Carolina and historically underrepresented backgrounds. By fostering strategic university partnerships and creating structured pathways to pharmacy education, these efforts contribute to diversifying the pharmacy workforce and addressing declining enrollment trends.
R-7	Patricia H. Fabel, PharmD; Kayce M. Shealy, PharmD; Cecily V. DiPiro, PharmD; Michele James, MSW; Courtney Brightharp, DHSc; Kristian Myers, MPH; and Gene Reeder, PhD University of South Carolina College of Pharmacy
	Expanding Team-Based Care in Rural South Carolina through a Pharmacy and Public Health Partnership The South Carolina Pharmacy Association (SCPhA) was awarded a five-year grant from the SC Department of Publich Health (DPH, formerly the SC Department of Helath and Environmental Control) to promote and expand team-based care in SC by developing a training program, participating in an interdisciplinary learning collaborative, contributing to a state-wide change package, and conducting pilots that integrated pharmacists into primary care practices for 2 days a week for 12 weeks. Objective: To describe the impact of integrating pharmacists into rural SC primary care practices. Methods: SCPhA and DPH partnered to conduct 3 team-based care pilots in rural SC from August 2021 and September 2022. Two were between a community pharmacy and a medical practice. The third was in a Federally Qualified Health Center (FQHC) with its own outpatient pharmacy. Pharmacists and medical practices were identified through existing relationships. The interdisciplinary learning collaborative and change package resources were used to customize the pilot to the specific practice and pharmacist. Pharmacist time, salary, types of visits or services provided, and billing codes were documented. Immunization rates, medication related problems, practice level quality metrics, and patient demographics were also collected. Descriptive statistics were used to portray the sustainability and expansion of team-based care. Results: The pharmacist in the pilot between the Rural Health Center (RHC) and the community pharmacy had 92 patient visits over 12 weeks, 37% of which were Medicare Chronic Care Management (CCM) visits. In addition to bringing in 34.3% of their salary in direct revenue, the RHC pharmacist solved 91% of medication related problems (MRPs) found and administered or scheduled 47% of the immunizations recommended. The FQHC pharmacist saw 68 unique patients, mostly for Medicare Annual Wellness Visits. In addition to bringing in 41.1% of their salary in direct revenue, the FQHC pharmacist solved 82.3% of MRPs found and administered or scheduled 46.3% of the immunizations recommended. The pharmacist in the patient centered medical home and community pharmacy pilot mostly conducted CCM visits, 63.6% of which were billed at a higher rate due to the pharmacist. Significance: Integrating pharmacists into primary care may close gaps in care for patients with chronic disease in rural SC. However, additional research and policy changes are needed regarding payment for pharmacist services within

	primary care for these models to be sustainable and expand beyond the Medicare population.
R-8	Yu-Hua Fu, PharmD, MS, PhD,[1,2], Jing Wu, PharmD, MPH[3], Barbara Zarowitz, PharmD, FCCP, BCGP, BCPS, FASCP[2], Chad Worz, PharmD, BCGP, FASCP[3], Avra L. Thomas, PharmD, MS, BCGP, FASCP[3], Lynn Poore, MS[3], Christine R. Valeriann, MS[1], Dagmara P. Zajac, PharmD[3], Nicole Brandt, PharmD, MBA, BCGP, FASCP[1,2], Catherine E. Cooke, PharmD, BCPS, PAHM[1,2] 1. Department of Practice, Sciences and Health Outcomes Research, University of Maryland Baltimore School of Pharmacy, Baltimore, MD, USA 2. Peter Lamy Center on Drug Therapy and Aging, University of Maryland Baltimore School of Pharmacy, Baltimore, MD, USA 3. American Society of Consultant Pharmacists (ASCP), Alexandria, VA, USA
	Assessing Pharmacists' Readiness for Age-Friendly Care: A Needs Assessment Survey The Age-Friendly Health Systems (AFHS) 4Ms framework—Medication, Mentation, Mobility, and What Matters— has been shown to improve health outcomes for older adults. Its implementation in the U.S. healthcare system is expanding. With a grant from The John A Hartford Foundation there are expanded opportunities for pharmacists to incorporate the 4Ms in long-term care settings. Objectives/Purpose: A needs assessment was conducted to determine pharmacists' familiarity with the 4Ms and identify training and educational needs. Methods: A cross-sectional survey was conducted among members of the American Society of Consultant Pharmacists (ASCP). The survey link was distributed via email and at four regional meetings. The survey consisted of 38 questions, including multiple-choice and free-text questions, across three sections: participant characteristics, familiarity with AFHS, and awareness and implementation of the 4Ms. Participants' comfort in assessing and acting on the 4Ms was measured using a five-point Likert scale. Responses were categorized as comfortable (Likert scale 4-5) or not/less comfortable (Likert scale 1-3). Comfort in assessing a specific 4M domain was defined as scoring 4 or 5 on all items within that domain. Data collection occurred from April 13 to July 15, 2024. Descriptive analyses were performed, and Fisher exact tests were utilized to explore the association between awareness and implementation of the 4Ms concepts. Results/Outcomes: Of the 232 surveys eligible for analysis (representing 6.6% of ASCP members), 66.4% were female, 62.5% had over 20 years of practice experience, and 51.4% worked in post-acute or long-term care facilities. Awareness of the AFHS initiative was reported by 62.1% of respondents. Comfort in assessing each of the 4Ms varied: "Medication" (73.3%), "What Matters" (71.1%), "Mobility" (28.9%) and "Mentation" (27.2%). Over 50% of respondents had never assessed "Mobility" and "Mentation". Overall, only 17.7% of respondents were comfortable assessing all 4Ms. Significant positive associations were found between awareness and acting on "Medication" and "What Matters" ($p < 0.001$). Significance/Implications/Relevance: The findings suggest that future education efforts impart skills for impacting "Mobility" and "Mentation" along with enhancing the 4Ms as a collective set.
R-9	Katherine Gruenberg, PharmD, MA Conan MacDougall, PharmD, MAS, Jennifer Cocohoba, PharmD, MAS

	Department of Clinical Pharmacy at the University of California San Francisco School of Pharmacy
	Bridging the PrEP Knowledge Gap: Evaluating the National HIV Curriculum in a Pharmacy Program It's estimated that 64% of U.S. persons indicated for HIV Pre-Exposure Prophylaxis (PrEP) are not prescribed it. Several states have passed legislation supporting pharmacist-prescribing of PrEP as one strategy that could bridge this gap. Education is needed to support PrEP furnishing under these laws. Despite the imperative to train pharmacy students to fill this critical public health gap, not all pharmacy schools have the expertise or resources to develop a state-of-the-art curriculum. The National HIV Curriculum (NHC) is an online resource that provides core, scientific knowledge on HIV prevention and treatment. Incorporating the NHC within pharmacy curricula can equip future pharmacists with the knowledge needed to provide PrEP to patients. Objective: To evaluate the impact of the NHC on pharmacy student performance on an objective structured clinical exam assessing PrEP furnishing skills. Methods: This is an observational study of second year pharmacy students enrolled at the University of California San Francisco (UCSF) School of Pharmacy (SOP) between 2023-2024. Students participated in didactic lectures and a skills lab focused on PrEP. Course instructors developed a reader to accompany the in-class didactics for the 2023 cohort. In 2024, we introduced students to the NHC PrEP module to further deepen their knowledge. Both cohorts received equivalent in-person didactic and skills education on PrEP and were assessed on their ability to furnish PrEP via an objective structured clinical exam (OSCE). OSCE pass rates were compared using Chi-Square test via Microsoft Excel. Results: Seventy students (61.9%) completed the NHC PrEP module in 2024. The first-time pass rate on the PrEP OSCE was 92.5% in 2023 and 94.6% in 2024 ($X^2=0.42$, $p=0.52$). Of the 6 students that did not pass the PrEP OSCE station in 2024, 4 students (66.6%) did not complete the PrEP NHC module. Significance: The NHC is a freely available resource that can augment PrEP education within the pharmacy profession. Future studies may consider evaluating the effectiveness of NHC-based didactic education on student pharmacist engagement in HIV PrEP counseling and prescription within the experiential education setting.
R-10	Sarah N. Schneider, PharmD, MPH, Joni C. Carroll, BPharm, PharmD, Stephanie H. McGrath, PharmD, Kim C. Coley, PharmD, **Kelsey L. Hake**, PharmD University of Pittsburgh School of Pharmacy, Pennsylvania Pharmacists Care Network
	Social Determinants of Health screenings and referrals provided through community pharmacies participating in Pennsylvania Medicaid Payor programs Social Determinants of Health (SDOH) are the environmental and social conditions influencing health outcomes and well-being, including factors like socioeconomic status, education, neighborhood, employment, and access to food and healthcare. People in low-income, food-insecure households are more likely to experience negative health outcomes due to SDOH. Pharmacists can address SDOH because of their accessibility in communities and integrate SDOH screening and referrals into workflow to bridge gaps in access to social services. The Pennsylvania Pharmacists Care Network (PPCN) is a clinically integrated network (CIN) of over 200 community pharmacies that provide enhanced patient care services. Since 2022, PPCN has established programs with four Medicaid Managed Care Organizations (MCOs) to provide SDOH screening and

	referral services to patients. Pharmacists documented the care provided using a pharmacist electronic care plan (eCarePlan) and were reimbursed for these services as designated in the payor contracts. Objective: The objective of this project was to characterize SDOH services provided by pharmacists in a CIN of community pharmacies that participated in Pennsylvania Medicaid MCO payor programs. Methods: This is a retrospective study of existing, deidentified eCarePlan data from four Medicaid SDOH-service payor programs. Care plans from August 2022-April 2024 were included. Descriptive statistics were used to characterize the number of participating pharmacies, unique patients, and services provided. Data was managed with SPSS. This project was designated as not human subject research by the University's IRB. Results: From the four payor program's eCareplan data, a total of 15,441 reimbursed SDOH services were provided across 108 pharmacy locations. Of those reimbursed SDOH services, 11,661 were screenings and 3,780 were referrals. These SDOH services were provided to 5,421 unique patients. Categories of referral were determined for 2,499 (66.1%) of the total referrals made (3780), with the remaining referrals not categorized in earlier eCarePlan data. Referral categories were: Food Insecurity (22.4%); Financial Insecurity (18.9%); Healthcare access/affordability (14.1%); Utilities (11.6%); Clothing (8.9%); Housing (8.7%); Transportation (8.2%); Employment (5.2%); and Childcare (2.0%). Significance/Implications: This analysis demonstrates the adoption of the first pharmacy-based SDOH payor program services. Pharmacies are accessible healthcare practices where SDOH services can occur. Results can better support and recognize the important role of pharmacists in eliminating healthcare disparities.
R-11	Eduardo Han, PharmD. Candidate, Mallorie Holmes, PharmD. Candidate, Xiang Simon Wang, PhD, MS Howard University College of Pharmacy
	Exploring AI Chatbot Effectiveness in Enhancing Pharmacy Education Artificial intelligence (AI) chatbots have emerged as potential tools to support pharmacy education by providing students with instant feedback and personalized learning. However, concerns regarding accuracy, reliability, and adaptability to complex pharmacy-related questions remain. This study evaluates the reliability of AI chatbots in answering pharmacy-related questions, assessing their accuracy across different question complexities and formats. Objectives: The study aims to determine the accuracy and consistency of AI chatbots in pharmacy education by analyzing their performance on a dataset of pharmacy-related questions. Additionally, it explores the potential for AI-driven consensus accuracy to enhance reliability and support next-generation pharmacy training programs. Methods: A total of 500 randomized pharmacy-related questions from established question banks were analyzed, with 389 selected after applying exclusion criteria. These questions, sourced from RxPrep and McGraw Hill, were categorized by Bloom's Taxonomy to assess complexity (simple vs. complex) and question format. Seven AI models were tested individually, with their responses evaluated for accuracy, consistency, and ability to navigate case-based questions. A consensus accuracy method was applied, simulating how students might consult multiple AI models to determine the most reliable answer. Accuracy rates were compared using statistical analysis, with SPSS utilized to analyze AI performance in relation to student data.

	Results: AI chatbots demonstrated varying levels of accuracy, performing better on straightforward, factual questions while struggling with complex, case-based scenarios. Statistical analysis revealed significant correlations between question complexity and AI model accuracy, with higher accuracy in simpler question formats. However, applying a consensus voting method significantly improved overall reliability by mitigating errors from individual models. Despite strong performance in certain areas, AI chatbots faced challenges in accurately addressing clinical decision-making scenarios, highlighting the need for improvement in handling more complex pharmacy-related questions. Significance: As AI technology advances, chatbots may become integral to pharmacy education, offering scalable and adaptive learning tools. By refining AI models and integrating consensus-based accuracy improvements, pharmacy programs can leverage AI-driven education to enhance student training, reduce faculty burden, and attract future pharmacists into a technologically advanced profession.
R-12	Micah Hata, PharmD, Xin Pan, PharmD, MPH, Crystal Lao, PharmD, Preeti Kotha, PharmD, APh, Anandi Law, PharmD, MS, BPharm Western University of Health Sciences
	Revolutionizing Pharmacy Practice: Innovative Models for Patient Care and Reimbursement Pharmacy practice has evolved in providing direct patient care services but lack of recognition and reimbursement derail expansion of pharmacist roles. In addition to serving as launchpads for the next generations of practitioners, academic institutions can also train students in setting up and testing two innovative models of patient care and reimbursement. Two innovations have been developed at our institution to train students/postdocs for advanced practice. Innovation 1: Center for Initiatives in Medication Management (CIMM) – A College of Pharmacy Center that contracts with commercial health plans in a financial and outcome accountability or value-based payment model. Our rotation students are trained to provide direct patient care services to high-risk patients; and to document and bill for services. Innovation 2: Establishment of a postdoctoral position funded by a consortium of independent pharmacies to provide telehealth assessments and recommendations to their patients, with a potential ROI for the pharmacies. Objective: To provide an overview of the feasibility of two innovations to advance pharmacy care delivery. Methods: Data were collected on input and outcome variables of the interventions, including personnel hours, number of student trainees, number of patient encounters based on the types of services provided, and potential reimbursement. Descriptive analyses were performed to summarize the outcomes. Results: Innovation 1: A total of 75 students were trained to perform telehealth services between 2021 and 2024. During this period, 8,832 outreaches were made, of which 1,088 were actual patient encounters. Of these, 193 patients received Comprehensive Medication Management (CMM) and 574 patients received counseling on medication adherence. The estimated annual cost was $43,680, based on the donated time of four pharmacy faculty (salaried through the institution), who each contributed 3.5 hours per week, at an estimated average hourly pharmacist wage of $65. The reimbursement or revenue averaged $11,060 per year. The end-of-year value-added bonuses were $10,845 based on the 2023 outcome. Innovation 2: Between January and March 2025, a total of 36 Medication Therapy Management (MTM) sessions were conducted, potentially generating a reimbursement of $2,077.

	Implications: These innovations in pharmacy practice models can be invaluable to the transition of learners to practitioners. Ongoing experience and data analysis reveal feasibility of these models. Further information is needed for examining sustainability.
R-13	Brigid K. Groves, PharmD, MS1, **Allison Hill,** PharmD[1], John Grabenstein, RPh, PhD, FASHP, FAPhA, FRSPH[2], Mitchel C. Rothholz, RPh, MBA, FAPhA[3], Jann B. Skelton, RPh, MBA, FAPhA[4] 1. American Pharmacists Association 2. Vaccine Dynamics 3. Three-C Consulting 4. Silver Pennies Consulting
	Applying Pharmacist Communication Competencies to Increase Vaccine Confidence The American Pharmacists Association (APhA) partnered with CDC to enhance pharmacists' communication skills to address COVID-19 vaccine confidence. The Pharmacy Contributions to Address COVID-19 Vaccine Confidence project began in March 2020 and is located on vaccineconfident.pharmacist.com. Eighty-nine percent of Americans live within 5 miles of a community pharmacy; this geographic proximity and pharmacy outreach into communities allow ready access to a trusted healthcare provider. Pharmacists have administered more than 50% of U.S. COVID-19 vaccinations since December 2020. The Vaccine Confident program focused on pharmacists, student pharmacists, and technicians, emphasizing those serving communities with high social vulnerability, including rural settings and minority communities. Purpose APhA engaged practitioners and other partners to identify practice needs and develop programs and resources to prepare pharmacy teams to meet community needs to address vaccine confidence. Results: The vaccineconfident.pharmacist.com website hosts and disseminates information and resources. Seventy-three focus groups and listening sessions were held, and more than 7,650 pharmacists were surveyed about their vaccine beliefs and behaviors, with results leveraged to develop tools and resources. Subject-matter experts conducted 50 live and enduring educational programs. One hundred five podcasts and videos of peer pharmacists providing exemplary outreach, including tips for achieving vaccine equity, were released. Over 150 pharmacists were profiled, showcasing their success in vulnerable populations. Nine "Show-you-know" quizzes challenged factual understanding and helped resolve knowledge gaps. Patient-facing tools were developed, such as information sheets, brochures, and webinars. Thirteen journal articles and op-eds were authored and published. Hundreds of social media messages were developed and distributed through all APhA platforms. Significance Pharmacists demonstrated clinical acumen in adapting communication skills to vaccine-confidence topics. Pharmacists are trusted and effective providers who address public concerns and improve vaccine uptake. Pharmacists reach vulnerable people, vaccinating those with limited income, language skills, or transportation. The electronic hub provided by vaccineconfident.pharmacist.com offers nimble training directly to care sites. The American public responded, readily accepting pharmacies as vaccinators. This poster was previously presented at the 2024 National Immunization Conference.
R-14	Xiangxiang Jiang, MS, Gang Lv, MD, Kevin Lu, PhD, FISPE, BPharm University of South Carolina College of Pharmacy
	Financial Stability in the Pharmacy Workforce: Employment Trends and Wage Disparities from Occupational Employment Statistics

	Pharmacists play a crucial role in meeting the health-related needs of individual patients and populations by ensuring safe and effective medication use, optimizing treatment outcomes, and addressing healthcare disparities. As the demand for pharmaceutical care continues to evolve, understanding workforce trends, employment patterns, and wage disparities is essential for ensuring an adequate supply of pharmacists to serve diverse patient populations. This study analyzes employment growth, wage variations, and regional disparities in pharmacist compensation to inform strategies that enhance access to pharmacy services and improve healthcare delivery nationwide. Objectives/Purpose This study aims to: (1) examine trends in pharmacist employment and wages from 2014 to 2023, (2) compare employment and wage growth among pharmacy technicians, and (3) assess geographic wage disparities and workforce implications. Methods The Bureau of Labor Statistics (BLS) Occupational Employment and Wage Statistics (OES) data were analyzed to assess employment and wage trends for pharmacists and pharmacy technicians across the U.S. from 2014 to 2023. Descriptive statistical analyses were performed to examine employment growth rates, wage changes, and the relative income gap between pharmacists and pharmacy technicians. Results/Outcomes Pharmacist employment increased by 14.1% over the study period, rising from 290,780 in 2014 to 331,700 in 2023, while median wages grew by 12.5%, from $120,950 to $136,030. Pharmacy technician employment expanded at a faster rate of 24.8%, with median wages increasing by 35.2% to $40,300. Despite pharmacists earning significantly higher wages than technicians, the wage gap narrowed from 4.1 times higher in 2014 to 3.4 times in 2023. Geographic wage disparities were evident, with the highest annual mean pharmacist salaries in California, Alaska, and Oregon (exceeding $146,000), while Puerto Rico, Nebraska, and North Dakota reported the lowest (below $120,000) in 2023. Significance/Implications/Relevance These findings highlight notable shifts in the pharmacy workforce, particularly the faster employment and wage growth of pharmacy technicians compared to pharmacists, leading to a narrowing income gap. While pharmacists continue to earn significantly more, their wage growth has been slower, which may impact on workforce retention and recruitment. Additionally, geographic wage disparities remain substantial. To address these disparities and ensure an adequate pharmacist supply, policymakers should consider targeted financial incentives, salary adjustments, and workforce support programs in lower-paying regions. Furthermore, workforce planning must account for the increasing role of pharmacy technicians, evolving pharmacist responsibilities, and the impact of automation.
R-15	Talia Puzantian, PharmD, BCPP, **Omar Ketana,** PharmD Candidate, **Cindy Duong**, PharmD Candidate Keck Graduate Institute School of Pharmacy
	Mental Health First Aid Training in California Pharmacists and Pharmacy Students to Raise Awareness, Increase Knowledge, Improve Attitudes, and Promote Resources and Linkages Nearly one in four Americans live with a mental health condition and fewer than half receive services. Surveys have shown that the general public have confidence in pharmacists' ability to assist with health issues, yet community pharmacists may not be adequately trained to provide mental health support. Increasing mental health awareness in pharmacists may help promote linkages to resources and treatment.

	Objective: To describe the impact of Mental Health First Aid (MHFA) training in pharmacists and pharmacy students. Methods: Pharmacists and pharmacy students from California were provided MHFA training along with a guide to local resources and completed electronic pre- and post-training surveys and post-course evaluation. Participants' knowledge was rated in their ability to describe the purpose of MHFA, recognize signs and symptoms of mental health and/or substance use challenges, and explain coping skills. Attitudes were assessed through the likelihood of having supportive conversations with individuals showing signs and symptoms and of making linkages to appropriate resources. Primary outcomes were changes in mean rating scale scores with 1=none, 2=low, 3=moderate, and 4=high. Secondary outcomes were evaluation of utility of the course and linkages made. Curriculum and surveys were standardized, delivered by trained instructors, and participants served as their own controls to maximize validity and minimize bias. Excel Analysis ToolPak was used to perform descriptive statistics and paired samples t-test with p-value of < 0.05 to determine significance. Results: Of 728 pharmacy professionals trained across 51 courses from January 2023 through March 2025, 309 were pharmacists, 401 students, and 18 technicians. Average age was 33 years (Range: 19-77); 70% were female, 27% male; and 54% were Asian, 25% white, 4% Black, 11% other and 6% preferred not to answer. Significant improvement was observed in mean ratings for understanding the purpose and role of MHFA (2.6 to 3.7), recognizing signs and symptoms of mental health challenges (3.0 to 3.7), and explaining ways to cope when providing MHFA (2.6 to 3.7) (all $P< 0.0001$). Mean ratings increased for attitudes in likelihood of having a conversation with someone showing signs or symptoms (2.9 to 3.7) and likelihood of making linkages to appropriate resources (2.7 to 3.7) (both $P< 0.0001$). Nearly all, 95% of participants, found the course helpful and informative and 73% reported that it better prepared them professionally. Significance: Improving mental health awareness in pharmacists may address current gaps and serve as a model to increase linkages to resources and treatment.
R-16	Grace M. Kuo, PharmD, MPH, Krystal K. Haase, PharmD, Rebecca B. Sleeper, PharmD, FASCP, BCPS, Eric J. MacLaughlin, PharmD Texas Tech University Health Sciences Center Jerry H. Hodge School of Pharmacy
	Creating a Hybrid Pathway, Building Distinctions, and Enhancing Pharmacy Practice Training Texas Tech University Health Sciences Center focuses on meeting the health care needs of 10 million individuals residing in 50% of Texas' land mass across 121 counties in the Panhandle, West and North Texas regions, where 20 of the 22 "pharmacy deserts" in Texas are located. Objectives/Purpose: To develop an expanded pharmacist workforce and attract students by expanding access to pharmacy education, building distinctions, and enhancing pharmacy practice training. Methods: (1) To expand access to pharmacy education, we created an innovative hybrid pathway to enhance and complement the traditional in-person pathway. (2) To build distinctions for student success, we collaborated with other schools within the university to offer dual degree programs. We also assessed opportunities to offer students added credentials. (3) To enhance pharmacy practice training, we designed our curriculum to include extensive experiential education as well as hands-on learning in lab sessions.

	Results/Outcomes: (1) In 2024, we launched a hybrid "Pioneer Pathway" and enrolled the first cohort of 9 students. For Fall 2025, the pioneer pathway has already admitted 17 candidates with 8 awaiting interview, whereas the traditional pathway has admitted 80 with 29 awaiting interview. Compared to last year, the total number of applications we have received has increased by 35%. (2) There were 200 PharmD/MBA graduates since 2009 and 3 PharmD/MPH graduates since 2022. Both dual degrees can be completed in four years; so far 2 graduates have completed 3 degrees in 4 years! All graduates since 2023 have earned a Concentration in Special Populations by successfully completing
R-17	Kelvin M Lu, PharmD Oluwatoyin Fadeyibi, PharmD, MPH Andrew M Peterson, PharmD, PhD, FCPP Philadelphia College of Pharmacy at Saint Joseph's University, Philadelphia, Pennsylvania and Community Behavioral Health, Philadelphia, Pennsylvania
	Evaluation of Behavioral Health Pharmacy Advocates (BHPA): A Training Program for Pharmacy Personnel Recent epidemiological data indicate that 57.8 million (22.8%) U.S. adults were diagnosed with a mental illness, yet only 53.9% accessed mental health services within the past year. Similar barriers to care exist for individuals with behavioral health (BH) issues and social determinants of health (SDOH) needs. In Pennsylvania, 55% of pharmacy personnel did not "feel confident" in screening for BH conditions and more than 60% reported they were unable to refer patients to local substance use treatment centers. In response to this, we created a 14-hour CE program targeted towards BH and SDOH challenges called Behavioral Health Pharmacy Advocates (BHPA). Objective: The purpose of this study was to assess the efficacy of the BHPA program in modifying practice behaviors and attitudes of pharmacy staff towards patients with BH and SDOH needs. Methods: This mixed-methods study employed an explanatory sequential approach. Pharmacy staff from community pharmacies in Pennsylvania completed the BHPA training program, consisting of 9.5 hours of asynchronous and 4.5 hours of synchronous activities (the intervention). Participants completed a survey at baseline, immediately post-intervention, and two months post-intervention. The survey assessed participants' self-reported abilities in various aspects of BH and SDOH services using a 5-point scale. Quantitative data were analyzed using Wilcoxon signed-rank tests. A focus group was conducted two months post-intervention to gather qualitative data on program efficacy. Results: Twenty-seven participants were recruited from four pharmacies across eight locations. Eighteen completed the asynchronous component with 16 and 4 completing the first and second post-surveys, respectively. Statistically significant improvements were seen in participants' self-reported abilities across multiple domains, including screening patients for BH issues (Mpre=3.06, Mpost=4.19, p=0.003), providing brief interventions (Mpre=3.06, Mpost=4.25, p=0.002), and referring patients to appropriate support services (Mpre=2.81, Mpost=4.25, p=0.003). Qualitative data from the focus group highlighted increased confidence in using resources, while identifying challenges in implementation. Implications: The BHPA program demonstrated a positive impact on pharmacy staff's self-reported abilities and confidence in providing BH and SDOH-related services. Significant improvements were observed across multiple domains. Qualitative insights revealed both benefits and challenges in real-world

	implementation. These findings suggest that the BHPA program may enhance pharmacy-based BH services, potentially improving patient care in this area.
R-18	Kevin Lu, PhD, FISPE, BPharm, Xiangxiang Jiang, MS, Gang Lv, MD University of South Carolina College of Pharmacy
	Projecting the Future of the Pharmacy Workforce: Supply, Demand, and Policy Implications: A National Pharmacy Workforce Analysis Pharmacists play a crucial role in healthcare delivery, providing medication management and chronic disease care. However, workforce shortages, geographic disparities, and misalignment with population health needs threaten the sustainability of pharmacist services. Understanding workforce projections and key drivers of imbalances is essential for evidence-based policymaking. This study uses data from the National Center for Health Workforce Analysis (NCHWA) to project pharmacist supply and demand, assess workforce distribution, and identify factors contributing to shortages or surpluses. Objectives/Purpose: This study aims to: (1) project pharmacist supply and demand through 2037, and (2) identify key drivers influencing workforce trends. The findings will inform strategies to optimize the pharmacy workforce. Methods: We analyzed data from the National Center for Health Workforce Analysis (NCHWA), incorporating surveys, administrative records, and workforce modeling. The Health Workforce Simulation Model (HWSM) was used to project pharmacist supply and demand through 2037, accounting for factors such as retirement patterns, graduation rates, and evolving healthcare needs. Workforce projections included scenarios where pharmacists retired two years earlier or later and where pharmacy graduate numbers varied by ±10%. Results/Outcomes: In 2022, the U.S. pharmacist workforce consisted of 350,340 professionals, meeting 98.5% of the national demand. However, this adequacy ratio is expected to decline to 95.75% by 2037 due to supply and demand shifts. Key factors influencing workforce supply include retirement trends and the number of pharmacy graduates. If pharmacists retire two years earlier than expected, the workforce may shrink by 3.22%, whereas delaying retirement by two years could expand it by 2.84% in 2037. Additionally, a 10% decrease in pharmacy graduates could reduce the workforce by 3.63%, while a 10% increase could lead to a corresponding 3.63% growth. On the demand side, expanded healthcare access is projected to increase demand by 2.03%, while initiatives to reduce racial healthcare disparities could drive an 8.95% rise in demand by 2037. Significance/Implications/Relevance: The projected decline in pharmacist workforce adequacy to 95.75% by 2037 underscores the need for proactive workforce planning. Addressing shortages requires expanding pharmacy education, implementing loan forgiveness programs, and improving retention through workplace incentives. Given rising demand from healthcare expansion and efforts to reduce racial disparities, optimizing pharmacist roles through scope-of-practice expansion and tele-pharmacy is essential. Targeted policies can help align workforce supply with population health needs, ensuring equitable access to pharmacist services and supporting a sustainable healthcare system.
R-19	Sydney Stawarz, PharmD, Kelsey Hake, PharmD, Stephanie McGrath, PharmD, **Melissa Somma McGivney, PharmD** University of Pittsburgh School of Pharmacy and Pennsylvania Pharmacist Care Network
	Impact of a Statewide Clinically Integrated Pharmacy Network on Medicaid Member Service Engagement

	The Pennsylvania Pharmacists Care Network (PPCN)/CPESN is a statewide clinically integrated network (CIN) of over 200 independent and grocery-store community pharmacies. Since 2017, PPCN has partnered with a Medicaid Managed Care Organization (MCO) to support pharmacist-provided patient care services and payment. In August 2022, PPCN and the Medicaid MCO launched a multi-service program that provides reimbursement for 11 enhanced patient care services to members with Medicaid. PPCN pharmacists document these services in the Pharmacist eCare Plan (PeCP) to facilitate longitudinal patient care and facilitate reimbursement. Objective: To analyze the impact of a partnership between a MCO and a CIN of community pharmacies that implemented pharmacist-provided services for Medicaid patient members. Methods: This project is a retrospective analysis of de-identified PeCP data from PPCN pharmacies participating in a Medicaid MCO multi-service program. Subjects are patients who received at least one service at a participating network pharmacy between August 1, 2022, and December 31, 2024. Services include: (1) medication synchronization, (2) medication reconciliation, (3) home delivery, (4) adherence packaging, (5) naloxone dispensing and education, (6) COVID-19 vaccination, (7) health risk assessment, (8) home visit, (9) smoking cessation, (10) social determinants of health (SDOH) assessment, and (11) SDOH referral. Data management and analysis was conducted using excel and descriptive statistics were used to characterize the data. Metrics evaluated include: (1) number of participating pharmacies, (2) number of unique patients engaged, (3) number of patient encounters documented, (4) number of each service provided. Results: There were 66,016 patient encounters documented for 9,996 unique patients across 109 unique pharmacies engaged between August 1, 2022, and December 31,2024. Overall, 92,359 services were provided: 27,923 medication synchronizations, 9,636 medication reconciliations, 23,794 home deliveries, 12,450 adherence packaging services, 779 naloxone dispensing and education services, 1,117 COVID-19 vaccinations, 3,096 health risk assessments, 570 home visits, 22 smoking cessation services, 10,932 social determinants of health (SDOH) assessments, 2,040 SDOH referrals. Conclusions/Implications: A partnership between a MCO and PPCN allowed for the implementation and reimbursement of pharmacist-provided enhanced patient care services across Pennsylvania. Medicaid patient members continue to access these services each year demonstrating a need for these services in the community. In 2025, this program will expand to include disease state management services.
R-20	Kathryn A. Morbitzer, PharmD, MS, Mary R. McClurg, PharmD, MHS, Sahaana R. Veeravalli, PharmD, Swaycha Goli, Jacqueline E. McLaughlin, PhD, MS The University of North Carolina at Chapel Hill Eshelman School of Pharmacy
	Exploring the path(s) less traveled: determining non-direct patient care pathway opportunities for pharmacists The pharmacy profession is undergoing a significant transformation, with the supply of pharmacists surpassing demand in traditional patient care roles. While the expansion of PharmD programs has increased the number of graduates, job growth in conventional pharmacy settings has stagnated. Concurrently, there is an increasing demand for pharmacists in non-direct patient care (NDPC) roles, such as the pharmaceutical industry, health policy, and data science. Despite

	this shift, many pharmacy curricula remain focused on direct patient care pathways, leaving graduates underprepared for emerging career opportunities. Objectives/Purpose: To explore healthcare employer perspectives on current and emerging NDPC opportunities for pharmacists and determine how PharmD education and training can evolve to better prepare students for these roles. Methods: Focus groups of healthcare employers were conducted to gain diverse perspectives on current and emerging non-direct patient care opportunities for pharmacists. Additionally, participants were asked how training for these opportunities could be incorporated into PharmD curricula to help graduates develop the skillset needed to succeed in these areas. Purposive sampling was used to identify focus group participants. Thirty-nine participants attended one of 16 focus groups over a two-month period. Thematic coding was used by three researchers to identify themes. Results/Outcomes: Findings revealed that pharmacists are increasingly sought after in managed care, pharmaceutical industry roles, consulting, and health policy. Emerging areas included health technology, data science, and medical device development. Employers emphasized that, beyond a strong clinical background, pharmacists must develop foundational knowledge in business principles, drug development, teamwork, and leadership. Participants highlighted the need for specialized pathways, certificates, or dual-degree programs to enhance competitiveness, particularly as pharmacy graduates compete with business and public health graduates for these roles. A major barrier to training in these areas was the limited faculty expertise in NDPC career pathways. Significance/Implications/Relevance: The shifting landscape of pharmacy employment necessitates curricular adaptation to prepare graduates for diverse career trajectories. This study's findings have informed the development of a specialized PharmD program at UNC Eshelman School of Pharmacy, focusing on the business of healthcare and the pharmacy enterprise. These insights are critical for pharmacy educators, employers, and policymakers in reshaping pharmacy education to meet evolving workforce demands. Future efforts should focus on faculty development, experiential learning opportunities, and interdisciplinary collaborations to enhance training for NDPC careers.
R-21	Olihe Okoro, PhD, MPH, MPharm[1], Nyika Friberg[2], Tobyn Chiu[3] University of Minnesota, College of Pharmacy 2. University of Minnesota, Medical School 3. University of Minnesota, School of Public Health
	Provider Blind spots: How pharmacists' lived experiences of social determinants are predictive of structural awareness Structural competency is the capacity for health professionals to recognize and respond to health and illness as the downstream effects of broad social, political, and economic structures. These structures shape social determinants of health (SDOH)—conditions in the environments where people live, learn, work, and age. While SDOH's impact on health disparities is recognized, little research examines providers' own SDOH experiences and how these relate to delivering structurally competent care. Objective: This study investigated whether pharmacists' historical exposure to adverse SDOH is associated with their structural awareness. Methods: A web-based cross-sectional survey was administered to pharmacists currently licensed to practice in Minnesota. Items included demographics; social determinants (using a modified Protocol for Responding to and Assessing Patient Assets, Risks, and Experiences [PRAPARE] questionnaire), and structural awareness-related items using a modified component of the Cultural

	Competence Self-Assessment Questionnaire [CCSAQ]). Risk scores for respondents' SDOH and structural awareness scores were calculated, respectively. A multiple linear regression model was used to examine the association between respondents' structural awareness and SDOH risk score, controlling for year of first licensure, primary setting of pharmacy practice, race, and gender. T-tests examined the difference in mean structural awareness scores with four stand-alone predictor variables: reliance on public transportation, insurance coverage gaps, food insecurity, and housing insecurity. Results: One-third (33.2%) of the respondents (N=611) practiced primarily in community/retail settings, 27.2% in hospital, and 17.7% in ambulatory care. Most respondents (75.5%) had never had unmet needs for an extended period; 83% had never been without insurance for ≥ 3 months. Most respondents had never experienced food insecurity (92.8%), housing instability (85.6%) or transportation needs (92.3%) over an extended period (≥1 month). Out of the 21 possible points demonstrating exposure to SDOH, participants scored an average of 4.9 (median = 4). Of 57 possible points, participants had a mean structural awareness score of 24.5 (median = 25). SDOH risk (assessed as historical experience) was significantly associated with structural awareness (95% CI; p-value = 0.0013) Significance/Implications: Respondents with lived experience of adverse SDOH were more likely to have higher structural awareness scores. This suggests that pharmacists without the lived experience of adverse SDOH, or related exposure, may not readily make the connection between structural factors and clinical presentation of disease. Pharmacy and continued education must therefore include structural competency training to enable pharmacists to recognize and contribute to addressing the root causes of health inequity in providing patient care.
R-22	Denise H. Rhoney, PharmD, FCCP, FNCS, MCCM[1] Nicholas Nelson, PharmD[2], Aleda Chen, PharmD, PhD[3], Ericka Kleppinger, PharmD[4], Mariann Churchwell, PharmD [5] Stephanie Sibicky, PharmD[6], Krisy Thornby, PharmD[7] Dennis Parker, Jr, PharmD, FCCM[8], Tina Brock, PharmD[9], Cindy D. Stowe, PharmD[10] 1. UNC Eshelman School of Pharmacy 2. Wingate University School of Pharmacy 3. Ceadarville University College of Pharmacy 4. Auburn University Harrison School of Pharmacy 5. University of Toledo College of Pharmacy 6. Northeastern University College of Pharmacy 7. Palm Beach Atlantic University College of Pharmacy 8. Eugene Appleaum College of Pharmacy and Health Sciences, Wayne State University 9. University of Melbourne 10. University of Arkansas for Medical Sciences College of Pharmacy
	Future-Proofing Pharmacy Education: A Stakeholder-Informed Forecast for Workforce Readiness Pharmacy is undergoing a transformational shift. Misalignment between education, workforce readiness, and evolving healthcare demands threatens sustainability. Using stakeholder-informed thematic analysis and predictive modeling, this study forecasts how pharmacy's role will evolve over the next 5-10 years to ensure alignment between training and workforce needs. Objectives: This study aims to identify disconnects between pharmacy education and practice, predict emerging roles and workforce priorities, and develop data-informed strategies to align education with real-world needs across the continuum of a career.

	Methods: A qualitative, thematic analysis was conducted using grounded theory techniques to extract themes from stakeholder (students, faculty, deans, preceptors, professional organizations, practice transformation leaders, payors, and interprofessional education experts) interviews. Common and divergent themes were identified across groups. Co-occurrence network models and centrality metrics mapped theme interconnections and core workforce challenges. Predictive trend forecasting using regression modeling (2025-2035) projected how these themes may shape the future of pharmacy. Results: Findings revealed workforce shortages are the most pressing challenges, with competency-based education (CBE) recognized as a solution to improve practice readiness. CBE implementation faces challenges, including faculty training gaps, accreditation barriers, and inconsistent assessment models. Expanding pharmacists' role in public health delivery was supported in chronic disease prevention, health equity, and interprofessional collaboration. Leadership and advocacy were identified as key future priorities, students and preceptors placed less emphasis on these skills, contrasting with faculty, deans, and professional organizations that stressed their necessity for shaping pharmacy practice policy to expand pharmacists' influence. Despite shared concerns about digital transformation, students showed limited awareness of its impact, while faculty and leaders emphasized the need for education supporting use of advanced technologies and personalized medicine. Regression modeling projects workforce strain through 2035 and transition to CBE as the dominant education model by 2030. Digital health, AI, and telepharmacy will triple in importance, requiring curriculum updates. Pharmacists' roles in public health delivery and pharmacy practice policy will expand, necessitating interprofessional collaboration and reimbursement reform. Implications: To close the divide between pharmacy education and workforce expectations, pharmacy schools must urgently consider transitioning to CBE, embedding digital health training, and strengthening public health integration. Predictive modeling highlights the need for workforce stabilization, faculty development, and structured frameworks that ensure graduates are prepared for evolving patient care models. These findings provide a roadmap for aligning pharmacy education with the future of healthcare, ensuring pharmacists are equipped to lead in digital transformation, public health expansion, and pharmacy practice advocacy.
R-23	Marie Smith, PharmD, Erika Vuernick, PharmD, Daren Anderson, MD, Mary Mulrooney, PhD, Ofer Harel, PhD, Prince Allotey, PhD University of Connecticut School of Pharmacy and Community Health Center, Inc.
	Expanding the Primary Care Workforce: Virtual Team E-consults for Medication Optimization and Patient Safety Although diversified primary care teams are a cornerstone of practice transformation, only 15-20% of primary care organizations work with a clinical pharmacist in their practice. Pharmacist e-consults help to expand primary care teams by providing PCPs with ""on-demand"" pharmacotherapy expertise to enhance medication-related care quality and safety. Pharmacist e-consults are asynchronous communications between a PCP and a clinical pharmacist within a secure web-based platform. PCPs use the pharmacist's expertise to address questions related to: (1) medication optimization/management, (2) preventable adverse drug events, (3) difficulty reaching therapeutic goals for chronic conditions, and (4) medication overload.

	OBJECTIVES 1. Characterize the use of a pharmacist e-consult service by PCPs. 2. Analyze differences in the type of e-consult questions by each discipline. 3. Measure PCP implementation rate of pharmacist e-consult recommendations. METHODS Retrospective review of pharmacist e-consult questions sent by PCPs, in a statewide network of 14 primary care practices serving 150,000 patients, to clinical pharmacist for an 8-month timeframe. A clinical pharmacist (PharmD with PGY1 ambulatory care pharmacy residency) answered all e-consult questions within 48 business hours. Quantitative data analysis included: a) provider demographics, b) reasons for e-consult, c) medication-related problems, and d) implementation rate of pharmacist recommendations. Descriptive statistics, chi-square tests, and ANOVA were used to assess the quantitative data. RESULTS 16 APRNs and 8 physicians utilized the pharmacist e-consult service over 8-months, with 46% being repeat users of pharmacist e-Consults. APRNs sent three times the number of e-consults and questions per e-consult compared to physicians. APRNs asked e-consult questions related to adverse drug events/drug interactions (43.6%), drug/dosage changes (18.1%), and renal/hepatic dosage adjustments (12.8%). For physicians, 62.1% of e-consult questions were specific drug adjustments for pregnancy/breastfeeding, pre-op, tapering protocols, or non-prescription drug use; and 17.2% of questions requested comprehensive medication regimen reviews (p< 0.0001). APRN e-consult questions had approximately 4 times more preventable adverse drug events (pADEs) than physicians, and nearly 5 times the number of moderate pADEs (requiring health care professional visits or hospitalization) compared to those of physicians (p=0.004). PCPs implemented 72% of the pharmacist e-consult recommendations. IMPLICATIONS • Demonstrates the feasibility of adding an ""on-demand"" pharmacist to an e-consult network as a pharmacotherapy specialist, especially when a primary care practice is unable to employ or contract a clinical pharmacist. • Provides an efficient and cost-effective approach to diversify and expand primary care teams. • Pharmacist e-consult services are a promising modality to decrease primary care workload for complex medication-related issues. "
R-24	Candy Tsourounis, PharmD Jessica Galens, PharmD, MBA Elise Wozniak, PharmD Lisa Kroon, PharmD, CDCES Desi Kotis, PharmD University of California San Francisco, School of Pharmacy
	Showcasing Pharmacy Value: A Data-Driven Perspective Rising pharmaceutical costs prompted UCSF Health to investigate opportunities to reduce pharmaceutical expenditures, with a focus on high-cost medications. A comprehensive analysis identified key areas for improvement: 1. Inventory Management, 2. Drug Utilization Management, 3. Drug Pricing Contract Optimization, and 4. Revenue Cycle Monitoring. Objective: To develop and implement a pharmacy value optimization program aimed at reducing pharmaceutical expenditures by addressing identified areas within the pharmacy enterprise. Methods: A pharmacy value optimization program was created with targeted expense reduction initiatives implemented concurrently. A budgeted expansion of pharmacists and analysts across cross-functional teams was incorporated into the optimization process. Goals were established in Q4 of the previous FY and progress was reported to senior leadership monthly. 1. Inventory Management: The purchasing, operations, and 340B teams held weekly meetings to monitor wholesale acquisition cost (WAC) spending and identify cost-saving opportunities. 2. Drug Utilization Management [DUM]: Established processes to

	improve cost-effective prescribing practices for emerging therapies and to facilitate the management of high-cost drug therapies, including appropriate site-of-care. Dedicated pharmacists and data analysts developed drug utilization reports, dashboards, and tools for ongoing DUM initiatives. 3. Drug Pricing Contract Optimization: An electronic inventory management system was implemented to allow for increased efficiencies in mitigating drug shortages and recall processes. Steps were taken to cut down on wasteful activities, such as switching to a single drug distribution model that uses automated dispensing cabinets. Completed a full review of all drug pricing agreements. 4. Revenue Cycle Improvements: Established comprehensive revenue cycle monitoring, including waste billing, new technology add-on payment (NTAP), charge capture, and reduction of avoidable write-offs. Results: Since 2020, the pharmacy value optimization program and structure have yielded over $750M in savings. The 340B optimization savings totaled $560M, driven by reducing avoidable WAC purchases and ensuring accumulations match utilization. Savings from drug use management were $154M, including biosimilar standardization across the system, dose rounding protocols, and ensuring an appropriate site of care for specialty infusions. Changes in inventory management and drug pricing contract optimization yielded $16.7M in savings. Revenue cycle improvements resulted in $14M in savings from waste billing and NTAP process improvements, improved charge capture monitoring, and reduction of avoidable write-offs. Significance: This success led to the expansion of the pharmacy workforce in analytics, informatics, pharmacy revenue cycle, and drug use management. The PVO program has evolved into a resilient, ongoing cost-saving program that continuously supports the needs of the health system.
R-25	Tyler J. Varisco, PharmD, PhD[1,2], Hannah Fish, PharmD, PhD[3], Joshua Bolin[4], Lucas Hill, PharmD, FCCP[5], David Dadiomov, PharmD, BCPP[6], Ekere J. Essien, MD, PhD[2], Matthew A. Wanat, BCPS, BCCCP, FCCM[1,7], Diane Ginsburg, PhD, RPh, FASHP[8], Jeanne Waggner, RPh[1], Taha Hussain[1], Jeffrey P. Bratberg, PharmD, FAPhA[9], Douglas Thornton, PharmD, PhD, BCPS[1,2] Prescription Drug Misuse Education and Research Center, University of Houston College of Pharmacy 2. Department of Pharmaceutical Health Outcomes and Policy, University of Houston College of Pharmacy 3. National Community Pharmacists Association 4. National Association of Boards of Pharmacy 5. Program Evaluation and Research Unit, University of Pittsburgh 6. University of Southern California, Alfred E. Mann School of Pharmacy 7. Department of Pharmacy Practice and Translational Research, University of Houston College of Pharmacy 8. University of Texas at Austin College of Pharmacy 9. University of Rhode Island College of Pharmacy
	The Pharmacy Access to Resources and Medication for Opioid Use Disorder Practice Guideline: Consensus Recommendations for Pharmacists and Distributors Less than 60% of community pharmacies in the United States dispense buprenorphine, the only agonist medication for opioid use disorder (OUD) that can currently be dispensed in that setting. Buprenorphine reduces opioid overdose risk by half, yet its limited availability in community pharmacies contrasts with recent federal policy changes aimed at improving access to medication for OUD. A complex web of regulations intended to prevent opioid diversion and limited clinical training on substance use disorder interfere with buprenorphine availability.

	Objectives: This research and dissemination campaign aimed to create consensus guidance for pharmacies and pharmaceutical distributors to enhance buprenorphine access in community pharmacies. Methods: We conducted a thematic analysis using open coding informed by the Theory of Planned Behavior on data from seven focus groups with 46 pharmacists across Texas, California, and West Virginia. Findings informed the development of vignettes describing pharmacy-level barriers to buprenorphine supply. We then convened a 22-member expert panel—including professionals in drug distribution, enforcement, regulatory policy, pharmacy practice, and addiction psychiatry—for a four-round Delphi study. In round one, participants reviewed vignettes and responded to open-ended questions to generate recommendations. In round two, recommendations were rated on a 9-point acceptability scale, with consensus defined as ≥70% of participants rating each item >7. Unresolved items were revised and reassessed in round three. Round four consisted of a four-hour live rating session. The final recommendations underwent additional refinement following a public comment period hosted by the National Association of Boards of Pharmacy. Results: After incorporating public feedback, the final pharmacist guidance contained nine major recommendations and 35 supporting recommendations addressing treatment adherence, appropriate use of buprenorphine monotherapy, strategies to minimize treatment interruptions, interpretation of prescription drug monitoring program data, care coordination, and stigma reduction. The companion guidance to pharmaceutical distributors included six consensus recommendations to improve buprenorphine wholesale access without legislative action. Implications: To our knowledge, this is the first consensus guidance specifically aimed at improving access to high-quality OUD care in community pharmacies. Endorsed by the American Society of Addiction Medicine, the American Pharmacists Association, and the American Association of Psychiatric Pharmacists, among others, this guidance provides practical, multidisciplinary solutions to empower pharmacists in supporting patients with OUD. Dissemination efforts include accredited continuing pharmacy education, conference presentations, and direct-mail campaigns. A companion toolkit for patients in treatment is in development.
R-26	Jacqueline M. Zeeman, PharmD, Suzanne C. Harris, PharmD, BCPP, CPP UNC Eshelman School of Pharmacy
	Building a Culture of Well-being: Assessing Factors that Influence Well-being and Burnout in Pharmacy to Identify Action-Oriented Solutions Numerous studies describe concerning rates of burnout; however, less is known about factors contributing to burnout and reduced well-being in the pharmacy workforce. Additionally, emerging literature suggests factors influencing these domains may vary by role (eg, clinician, faculty, student). The National Academy of Medicine (NAM)'s National Plan for Health Workforce Well-Being recognizes a shared responsibility to strengthen the health workforce that requires collective action by all actors in the U.S. health system, including academic institutions and clinical training programs. Identifying factors that influence burnout is key to establishing strategies to support well-being and move towards a healthcare workforce that is thriving as they improve population health, enhance care experience, and advance health equity.

	Objective/Purpose: The purpose of this study was to assess factors influencing burnout and identify strategies to promote well-being in faculty, staff, students, and post-doctoral fellows in pharmacy. Methods: Full-time faculty, staff, students, and post-docs were recruited to participate in this exploratory study. Focus groups were stratified by participant role to explore experiences that may be unique to these groups. A semi-structured interview format was used to discuss factors contributing towards burnout and well-being as well as solicit recommendations for strategies to improve well-being. Inductive coding was used to identify themes. Results/Outcomes: Sixty-three participants engaged in 21 focus groups: 11 faculty in 4 sessions, 27 staff in 5 sessions, 12 pharmacy students in 6 sessions, 6 graduate students in 3 sessions, and 7 post-doctoral fellows in 3 sessions. All groups identified workload as a factor impacting their burnout. Factors unique to each group were also identified, including workplace inefficiencies and unexpected factors (faculty), higher education culture (staff), competitive culture (pharmacy students), financial stressors (graduate students), and difficulty transitioning from academic program to fellowship training (postdocs). While factors positively contributing to well-being varied across groups, each emphasized relational elements (eg, connection, relationships) as notable. Recommendations varied by role: faculty and staff emphasized intentional workplace initiatives, pharmacy students recommended curricular strategies, graduate students emphasized peer connection and financial support, and post-doctoral fellows suggested non-supervisor support networks (eg, peer mentoring). Significance/Implications/Relevance: Academic institutions and clinical education programs training our future health workforce are important constituents in the shared responsibility to restore a thriving health workforce. While workload and relationships impacted all groups, findings suggest factors influencing burnout and well-being differ by role. Insights can inform strategies to promote well-being in health professions programs broadly, including pharmacy.
Session I: 12:00 PM – 1:15 PM ET **UNMODERATED POSTERS (LUNCHEON)** *Presenter at meeting are either bolded or listed as first author*	
L-1	Jacinda C. Abdul-Mutakabbir PharmD, MPH, Christine Cartlidge Sarah Hole, Rabia S. Atayee PharmD University of California San Diego, Skaggs School of Pharmacy and Pharmaceutical Sciences
	Leveraging Pharmacist-Led Community Interventions to Enhance Undergraduate Recruitment into Pharmacy School There is a well-documented shortage of primary care providers in highly vulnerable communities, and this shortage is linked to inequitable health outcomes affecting socially vulnerable groups. Pharmacists are ideally positioned to help address these gaps; however, reports indicate a decline in pharmacy school applicants over the past decade. Recent research suggests that exposing pre-professional undergraduate students to community-based interventions designed for vulnerable populations can enhance their recruitment into healthcare professions. Therefore, providing opportunities for undergraduate students to engage in pharmacist-led community interventions may serve as an effective recruitment tool for potential pharmacy students.

	Objectives: The study seeks to describe the outcomes of pharmacy student recruitment linked to a pharmacist-led intervention aimed at enhancing the use of preventive healthcare resources in vulnerable San Diego (SD) County communities. Methods: The community-based intervention, which includes activities such as providing access to blood pressure and glucose screenings and vaccinations in vulnerable SD communities, has been ongoing since August 2023. The recruitment of undergraduate students began in July 2023, and they were enlisted to help with advertisement and the registration of community members served in the clinic. The recruitment strategy included the dissemination of tailored announcements describing the community-based intervention and the incentives that would be offered to undergraduate participants. The recruitment announcement was sent to all pre-professional organizations on the UC San Diego undergraduate campus and professional organizations at surrounding undergraduate universities. Incentives provided to students included a letter of recommendation written by the lead facilitator, a professor at UC San Diego Skaggs School of Pharmacy and Pharmaceutical Sciences (SSPPS), and independent study credit following participation in three community clinics. For interested undergraduates, three recruitment meetings were held online (July 2023, July 2024, and January 2025). Outcomes: Cumulatively, 40 undergraduate students attended the three live virtual recruitment meetings for the community-based intervention, and 30 (75%) expressed interest in applying to the SSPPS. Twenty (50%) have participated in the community-based intervention, and seven of the 20 (35%) qualified for the letter of recommendation incentive. A letter of recommendation for the SSPPS was prepared for four of the seven (57%) eligible undergraduate students. Two of the four (50%) students have been accepted into the SPPSS, and the remaining two (50%) are currently under review for admission to the pharmacy program. Implications: Offering opportunities for undergraduate students to participate in pharmacist-led community-based interventions may be a viable mechanism for recruitment.
L-2	Sarah J. Billups, PharmD, BCPS, Danielle R. Fixen PharmD, BCGP, Ashley Daffron PharmD, BCACP, Ingrid Lobo, MD, Micol Rothman, MD, Marcus A, Chris Harty, Lisa R. Schilling, MD The University of Colorado Skaggs School of Pharmacy & Pharmaceutical Sciences (SSPPS)
	Optimizing pharmacist impact through a collaborative outreach model in a primary care setting The value of these two projects for the future of pharmacy draw upon two well-established facts: (1) There is a shortage of primary care providers that is projected to worsen in the coming years. (2) Clinical pharmacist collaborative care improves the quality of chronic disease management while providing positive provider and patient experiences in primary care settings. However, current payment models cannot support pharmacist collaborative management of every patient likely to benefit, so models that apply pharmacist skills to these patient populations in an efficient manner are needed. Objectives/Purpose: These two projects aimed to reduce clinical inertia and improve healthcare quality outcomes for patients with hypertension or osteoporosis through electronic consultations (e-consults) by embedded clinical pharmacists in an ambulatory care setting.

	Methods: Two interventions were built upon collaborations between a team of 12 decentralized clinical pharmacists, a centralized outreach team called Ambulatory Health Promotion (AHP), and primary care providers (PCPs). For these programs, the AHP team identified patients within one of two populations: (1) uncontrolled hypertension or (2) a recent hospital discharge for a fragility fracture, and performed outreach to schedule a primary care visit focused on optimizing care for the relevant condition. In phase two for both programs, in addition to scheduling a visit, AHP forwarded a note to the clinic-based pharmacist to review and provide recommendations via an electronic consultation ahead of the patient visit. The pharmacist e-consult provided patient-specific evidence-based recommendations to optimize therapy for hypertension or osteoporosis, respectively. Providers had the option of referring patients for pharmacist management, if desired, as the pharmacist team has collaborative practice agreements for both conditions. Results/Outcomes: Addition of the pharmacist e-consult was associated with reduced clinical inertia for both patient populations. Among hypertension patients with blood pressure >140/90 mmHg at the visit, medication therapy was intensified in 100/158 (63%) of intervention visits versus 68/154 (44%) of comparator visits (p=0.01), and more intervention patients (21% versus 16%), achieved a blood pressure < 140/90 within six months. For the post-fracture osteoporosis population, pharmacotherapy treatment rates increased from 197/428 (46%) to 107/187 (57%, p=0.03). A small number of patients were referred for pharmacist collaborative care. Significance/Implications/Relevance: This collaborative model brings together outreach coordinators, pharmacists, and medical providers to improve the care of patients with chronic conditions in a way that makes use of clinical pharmacist expertise effectively and efficiently. Pharmacists, providers, and outreach coordinators all expressed high satisfaction with this model.
L-3	Eurelis M. Rivera Pérez, Edgardo González Muñoz, Yu-Hua Fu, Eposi Elonge, Jing Wu, Barbara Zarowitz, Christine R. Valeriann, Dagmara P. Zajac, Lynn Poore, Avra L. Thomas, Chad Worz, Catherine E. Cooke, **Nicole Brandt** Department of Practice, Sciences and Health Outcomes Research, University of Maryland Baltimore School of Pharmacy, Baltimore, MD, USA 2 - Peter Lamy Center on Drug Therapy and Aging, University of Maryland Baltimore School of Pharmacy, Baltimore, MD, USA 3 - American Society of Consultant Pharmacists (ASCP), Alexandria, VA, USA
	Artificial Intelligence (AI): Understanding Pharmacists' Perspective and Opportunities for the Future Artificial Intelligence (AI) is an emerging tool capable of evaluating large patient datasets to reduce workload and assist healthcare providers in decision making. Objectives/Purpose: This cross-sectional study evaluates pharmacists' perspectives on incorporating AI into their workflow and examining its benefits and potential drawbacks. Methods: A cross-sectional survey was conducted among members of the American Society of Consultant Pharmacists (ASCP). The survey link was distributed via email and at four regional meetings. The survey consisted of multiple-choice and free-text questions about AI embedded within a survey on the awareness and implementation of age-friendly care. Data collection

	occurred from April 13 to July 15, 2024, and descriptive analyses were performed for the AI questions. Results/Outcomes: A total of 398 surveys were collected, with a 57.3% completion rate. Most survey respondents have been in practice for > 20 years (63.6%) and provide clinical services in a post-acute/long-term care facility (50.0%). Approximately 60% of respondents have obtained board certification in a specialty area. Only 12.7% of respondents could recall interacting with AI tools in their healthcare practice. Seven respondents reported use of ChatGPT or GPT-like tools, such as MEDai, Mdihealth, or OpenEvidence to streamline elements of their day-to-day tasks and for educational support. Although the respondents identified opportunities where AI could benefit their practice, 44.7% of respondents expressed discomfort with integrating AI into their workflow. About half of respondents indicated concerns regarding data privacy, bias, and meaningful decision support. Significance/Implications/Relevance: The findings suggest that future educational efforts to increase awareness and application of artificial intelligence accurately, efficiently, meaningfully, and safely are needed.
L-4	Thai Q. Nguyen, Alex Rothey, Barbara Nightingale, Annie Nagy, Sarah Schneider, Charles Christen, **Joni C. Carroll** University of Pittsburgh School of Pharmacy, Hilltop Pharmacy, Allegheny County Health Department
	Community Pharmacy Sexually Transmitted Infections (STI) Testing and Treatment Pilot One in four women experience barriers to hormonal contraception access, and maternal mortality is increasing, particularly in women of color. Thirty states and the District of Columbia currently allow pharmacists to prescribe hormonal contraception under collaborative practice agreement, standing order, or statewide protocol. In 2021, North Carolina (NC) passed legislation that allows pharmacists to initiate hormonal contraceptive pills and patches Objectives: This poster will describe how a diverse group of stakeholders collaborated to implement pharmacist-prescribed contraception and report uptake of pharmacist-prescribed hormonal contraception across NC. Methods: Coalition Building and Payment. A Contraception Summit was held in Chapel Hill that engaged over 80 stakeholders to identify strategies for successful implementation. NC Medicaid established a credentialing and payment process to allow contraception pharmacists to become providers and bill for clinical pharmacy services. Marketing: Points True North led a campaign including a statewide logo, social media ads and marketing materials to advertise pharmacist-prescribed hormonal contraception to patients. NCAP created an online tool entitled NC Pharmacy Finder where health care professionals, stakeholders, and the public can search to find a pharmacy in their community that provides hormonal contraception. Evaluation of Uptake: Descriptive data about uptake of contraception services included number of pharmacists trained as birth control pharmacists, number of pharmacists credentialed by NC Medicaid as birth control providers, and number of NC counties with a birth control pharmacy providing contraception services. Data about trained and credentialed pharmacists was reported by NCAP and NC Medicaid. Each trained pharmacist was contacted by phone to determine if they were providing contraception services and pharmacy locations were mapped by NC county. Results: Currently 1666 pharmacists have completed the NCAP training, 1464 pharmacists are recognized as contraception providers under Medicaid, and

	93% of NC counties have a pharmacy that provides hormonal contraception services. Significance: Implementation of pharmacist-prescribed hormonal contraception in NC was informed by a robust number of diverse stakeholders representing academia, research, legislators, pharmacy, medicine, reproductive health, reproductive justice, public health, Medicaid, and local communities. This interprofessional collaboration and coalition building supported successful implementation efforts.
L-5	Ashley W Ellis, PharmD, MBA, CDECS, Cori C. Grant, PhD, MBA, MS, Gladys Icaza Hunt, Ba, Savannah Fine, MD Candidate, H.K. Quinn Valier, PhD University of Tennessee Health Science Center, College of Pharmacy, Tennessee Population Health Consortium
	Through the Lens: Photovoice Reveals the Role of Pharmacists in Primary Care Meeting the health-related needs of individual patients and populations requires integrated, team-based approaches addressing chronic disease management, medication safety, and patient-centered care. Clinic embedded pharmacists are uniquely positioned to contribute by optimizing medication use, closing care gaps, and providing patient-centered education. This study explores the role of pharmacists in primary care, their contributions to improving health outcomes, and the barriers and facilitators of pharmacist-physician collaboration. Objectives/Purpose: This study aimed to examine how clinic embedded pharmacists contribute to patient-centered care, identify barriers and facilitators to their integration, and identify strategies for enhancing pharmacist-physician collaboration. Using the photovoice method, we documented real-world pharmacist experiences, providing insights into the care they provide. Methods: We recruited pharmacists from primary care clinics in the University of Tennessee Health Science Center's Tennessee Heart Health Network. Using a photovoice approach, pharmacists submitted photographs reflecting their experiences with collaboration, patient interactions, and system-level barriers. After a four-week collection period, a focus group discussion was conducted where participants described the significance of their images and shared their perspectives. Thematic analysis was refined through transcript review and validation. Results/Outcomes: Six pharmacists participated, representing four healthcare systems. Seven key themes emerged: integrating pharmacists into primary care, expanding their clinical responsibilities, addressing resistance, improving processes, enhancing safety and quality measures, and increasing provider and patient satisfaction. Pharmacists reported enhanced medication safety and better chronic disease management, leading to improved health indicators such as reduced A1C and increased adherence to preventive screenings. Challenges included lack of provider awareness of pharmacists' roles, workflow integration difficulties, and reimbursement limitations. Significance/Implications/Relevance: Findings demonstrate that integrating pharmacists into primary care significantly contributes to health improvements by enhancing chronic disease management, improving medication safety, and addressing gaps in preventive care. Expanding pharmacists' roles can help alleviate workforce burdens and improve health outcomes. Achieving sustainable integration requires policy changes to support reimbursement, workflow adjustments, and expanded training opportunities for interdisciplinary care teams. Future efforts should focus on scaling pharmacist-led interventions, improving collaboration models, and advocating for policy changes to ensure pharmacists fully contribute to population health efforts.

L-6	Philip E. Empey, PharmD, PhD, FCCM Lucas A. Berenbrok, PharmD, MS, BCACP, FAPhA James C. Coons, PharmD, FCCP, FACC, BCCP University of Pittsburgh School of Pharmacy, Pittsburgh, PA
	Training the future pharmacy workforce to deliver precision health through pharmacogenomics Insufficient education is a primary barrier for pharmacists to lead precision health through pharmacogenomics (PGx) implementation. Innovative methods are needed to facilitate efficient, high-fidelity learning that can be scaled broadly. We developed Test2LearnTM, a participatory education model that uses real genetic data within online, self-paced, competency-based education. This method increases learner engagement, self-efficacy, and learning outcomes. Objectives: To develop and integrate this approach into a new learning management system, create a training approach that supports degree programs and workforce training for those already in practice, and to deploy credentialing and licensing model to scale training for broad use. METHODS: The pilot version of the Test2Learn software was migrated from a simple app to a robust learning management system (LMS) and a Python/JavaScript (Django/Angular2) learning technology integration web-based application that meet accessibility standards (508 compliant). Real genetic data was made available securely for learner use through the 1000 genomes project or the 23andMe application program interface. Modularized education content (video, interactive exercises, formative/summative assessments) were developed with national experts to enable learners to achieve established pharmacist PGx competencies through self-paced and synchronous modules. A digital microcredentialing framework was developed to verify skill attainment at increasing levels of mastery based on pharmacists' roles in PGx implementation. Free (noncommercial) and commercial licensing terms and a train-the-trainer approach were designed to enable broad use. OUTCOMES: Test2Learn PGx education has been deployed through >150 programs/courses at 19 universities and across the Veterans Affairs National Pharmacogenomics Program nationally. Courses include a 1 h (awareness), 5 h (clinical decision making), and a 20 h (16h online, self-pace and 4 h synchronous) PGx certificate program with a train-the-trainer model. To date, over 4,000 pharmacists (>5,200 healthcare professionals) have been successfully trained, >21,000 h of continuing education have been awarded, and over 1,250 digital microcredentials have been achieved. Increases in pharmacist and pharmacy student self-efficacy/confidence to integrate PGx in practice and positive feedback regarding ease of use was provided. The click-through licensing model was easy to implement and efficient. SIGNIFICANCE: Online competency-based PGx education programs can successfully meet the needs of the future pharmacy workforce to achieve precision health through high-fidelity education that is accessible in a variety of settings.
L-7	Chandler Follett, PharmD The University of Colorado Skaggs School of Pharmacy & Pharmaceutical Sciences (SSPPS)
	Inspiring the Next Generation: The High School Pharmacy Outreach Program (POP) as a Model for Attracting Students to the Pharmacy Profession The pharmacy profession faces challenges in attracting applicants due to a lack of understanding of pharmacists' vast role in the community, on healthcare teams, and in patients' lives. This knowledge gap is particularly true with high

	school students from BIPOC and underserved communities. The High School Pharmacy Outreach Program (POP) was developed to educate and inspire students about pharmacy, emphasizing its diverse career opportunities and impact on patient care. By providing early exposure and mentorship, POP aims to cultivate, inspire, and equip future pharmacists with the knowledge and skills necessary for modern pharmacy practice. Objectives/Purpose: The primary objectives of POP are to (1) increase awareness of pharmacy as a career option among high school students, (2) provide hands-on experiences that highlight pharmacists' role in healthcare, and (3) develop professional skills and knowledge of pharmacy pathways. Methods: POP is structured into four interactive lessons covering fundamental aspects of pharmacy practice, public health contributions, career pathways, and medication safety. Sessions include pharmacy student-led discussions, hands-on activities (e.g., prescription bottle interpretation, patient counseling role-play, and blood sugar monitoring), and cultural competence training. The program partners with local high schools to deliver in-person lessons by pharmacy students. Surveys administered pre- and post-program assess changes in students' knowledge, perceptions, and interest in pharmacy careers. Results/Outcomes: Preliminary data indicate a significant increase in students' understanding of pharmacists' roles and interest in the profession overall. Qualitative feedback highlights the effectiveness of real-world pharmacy student interactions, hands-on activities, and mentorship components in fostering engagement and career consideration. Significance/Implications/Relevance: POP serves as a scalable model for introducing high school students to pharmacy careers while addressing knowledge gaps in the role of pharmacists. The program equips students with the knowledge and motivation to pursue pharmacy education by integrating early exposure, mentorship, and experiential learning. Expanding initiatives like POP nationwide can enhance recruitment efforts, ultimately leading to a more robust and prepared workforce that meets the evolving needs of healthcare and patient care. The program aligns with national efforts to modernize pharmacy education and ensure that the profession remains dynamic, inclusive, and patient-centered.
L-8	Heidi R. Olson, **Alice N. Hemenway**, Josie Clark, Marissa King, Megan Magnuson, Allison Schriever, Christopher Schriever, Kevin O. Rynn University of Illinois Chicago Retzky College of Pharmacy; Rockford Health Sciences Campus; Rockford, IL
	RFIT: Rural-Focused Interventions to actively develop and Train for rural pharmacy careers There is a critical need for pharmacists in rural communities. Per the 2019 National Pharmacist Workforce Study, only 13.9% of pharmacists work in rural communities, even though 20% of the United States population lives in rural communities. Objectives/Purpose: Create a comprehensive rural pharmacist pathway program, with an ultimate goal of increasing the number of graduates who practice in rural areas. Methods: An assessment of the school's previous rural pharmacist pathway program was initiated in April 2024. The assessment included the percentage of rural recruitment events, applicants from rural areas, students enrolled in rural IPPEs and APPEs, as well as graduates practicing in rural areas. It also included an evaluation of participant survey data from current, on-site outreach events.

	A gap analysis was performed to find areas of insufficiency and opportunities for improvement. Finally, a comprehensive program was developed to enhance several points on the educational pathway. Results/Outcomes: The assessment discovered that current outreach events receive high satisfaction scores by participants, but do not reach many rural residents (1.5% of participants). There are also few rural recruitment events (3.8%), rural applicants (2.7%), students' completing rural IPPEs or APPEs (0.6%), and graduates practicing in rural areas (2%). The gap analysis found opportunities to expand rural outreach and support within five points on the pathway: high-school, undergraduate, PharmD didactic, PharmD experiential, and post-graduate. The outcome was the creation of a rural pharmacist pathway program comprised of three aims: - Aim 1. In rural community high-schools and undergraduate institutions, increase awareness and interest in pharmacy as a career option, and improve appreciation of the role pharmacists play in rural healthcare. - Aim 2: For pharmacy students, increase interest and cultural competency in rural pharmacy practice and increase awareness of rural health needs. - Aim 3: For current rural pharmacists, provide expanded educational support and engagement with pharmacy learners. Significance/Implications/Relevance: Approximately 71% of rural counties in the United States have two or more pharmacy deserts. In addition, rural hospital closures and physician shortages affect access to care, with patients often relying on their local pharmacist to bridge this gap. Strengthening the rural pharmacist pathway is a critical step in providing high-quality care to one of the nation's largest underserved areas.
L-9	Sophia Herbert, PharmD; Katherine Brownlee, MPM; Melissa McGivney, PharmD, FCCP, FAPhA University of Pittsburgh – Pitt Vaccination and Health Connection Hub
	Preparing the Pharmacy Workforce to Provide Interprofessional Collaborative Care in Community Pharmacies The Pitt Vaccination and Health Connection Hub (Hub) is a preventative health and vaccination center integrated with an independent community pharmacy at the University of Pittsburgh. The Hub provides experiential learning opportunities to student pharmacists in all four years of the curriculum, as well as students from five health Pitt sciences schools: Dental Medicine, Medicine, Nursing, Public Health, and Health and Rehabilitation Sciences. The Hub offers a novel experience for learners by engaging them in the provision of community-based preventative healthcare on an interprofessional team within a community pharmacy. These interprofessional experiences prepare the next generation of pharmacists to engage in collaborative care and expand the impact of the community pharmacy workforce. Objectives/Purpose: 1) To describe a novel approach to community-based interprofessional education in a community pharmacy setting; 2) Assess student feedback on their interprofessional experience using the Interprofessional Education Collaborative (IPEC) competency areas. Methods: The quantity of student pharmacists and the number of hours served in 2024 were acquired from the Hub's volunteer management system. Qualitative learner feedback was generated from two sources: 1) a brief student exit survey (Qualtrics) was offered to students at the conclusion of their experience throughout 2024; and 2) students were invited to participate in an online discussion board to share learnings during Spring 2024. Descriptive statistics were used for quantitative data and a rapid deductive content analysis using the IPEC competency areas as a framework was used for qualitative data.

	Results/Outcomes: In 2024, 200 student pharmacists completed 4,500 hours of experience at the Hub collectively. A total of 65 student pharmacists completed the exit survey in 2024 (approximately 33% response rate) and 20 student pharmacists participated in the discussion board. Student-reported themes include 1) Values and Ethics: the importance of person-centered care; 2) Roles and Responsibilities: unique contributions of healthcare team members; 3) Communication: communication skills with patients and healthcare colleagues; and 4) Teams and Teamwork: how a high-functioning, collaborative team supports optimal patient care, specifically within a community pharmacy. Significance/Implications/Relevance: Community pharmacies can serve as a learning environment for community-based interprofessional education. Student pharmacist feedback confirmed that students learned about interprofessionalism through a Hub experience. Graduates of all health professional programs are expected to provide effective, collaborative care on interprofessional teams. Experiences at practices like the Hub equip student pharmacists and other health sciences learners with the skills they need to provide care on teams in the future.
L-10	Ellie LaNou, PharmD, BCPS, Kenja Hanniford, MS, CharLeigh Steverson, PharmD, Brian Lawson, PharmD, ICE-CCP Board of Pharmacy Specialties
	Implementation of continuing professional development (CPD) recertification framework within the Board of Pharmacy Specialties (BPS) The Board of Pharmacy Specialties (BPS) asserts the purpose of recertification is to help ensure that the board-certified pharmacist demonstrates a continued commitment to maintaining and further developing competencies necessary for safe and effective practice in the specialty area. In previous research, board-certified pharmacists report expanded competency, credibility, personal gratification, and confidence as benefits of maintaining certification. In 2024, BPS began integration of continuing professional development (CPD) within the recertification framework. The CPD-recertification framework is resultant of feedback from board-certified pharmacists who value cost-efficient and time-efficient recertification options. CPD can be defined as intentional, life-long learning through reflecting, planning, learning, evaluating, applying, and recording/reviewing. CPD activities include continuing pharmacy education (CPE) but also include practice-based activities such as academic/professional study, scholarly activities, teaching and precepting, workplace activities, and leadership/professional service. Objectives/Purpose: This project seeks to describe: (1) the implementation of CPD within the recertification framework and (2) CPD uptake among board-certified pharmacists. Methods: Certification cycles beginning January 1, 2024 were eligible for the updated CPD-recertification framework in 2024. Eligible board-certified pharmacists self-reported an annual reflection/plan (ARP) and CPD activities in the online platform, MyBPS. At the end of 2024, the database was queried to quantify CPD uptake and basic descriptive statistics were calculated. Results/Outcomes: In 2024, 8595 certifications were eligible for the CPD-recertification framework. 3609 ARP entries and 7780 CPD activities were self-reported by board-certified pharmacists. The most prevalent CPD activities were earning CPE, serving as a preceptor, and developing/presenting educational content. Significance/Implications/Relevance: Findings indicate that board-certified pharmacists are well-positioned to make recertification progress with CPD. BPS continues monitoring findings and feedback to inform quality improvement

	initiatives. This project may inform the implementation of CPD for other next-generation education, training, and development purposes such as maintenance of licensure, workplace performance evaluations, Doctor of Pharmacy curriculum, resident development plans, and more.
L-11	Keith D. Marciniak, BSPharm; Brigid K. Groves, PharmD, MS; Alex C. Varkey, PharmD, MS, FAPhA American Pharmacists Association (APhA)
	Enhancing Pharmacy Workforce Well-being: Analyzing Current Challenges and Strategies for Workplace Improvement Studies indicate that when pharmacists experience mental distress, it can adversely affect patient care and potentially jeopardize the sustainability of health care services. The American Pharmacists Association (APhA) is committed to promoting and maintaining the well-being and resilience of pharmacists, student pharmacists, pharmacy technicians, and pharmaceutical scientists in all practice settings. APhA has developed several resources to address well-being and workplace culture, most notably the Well-Being Index for Pharmacy Personnel (WBI) and Pharmacy Workplace Well-Being Reporting (PWWR). Objectives: To summarize APhA's actions in addressing pharmacist and pharmacy personnel well-being and workplace issues. To describe utilization of the WBI and PWWR tools. To list solutions to address pharmacy personnel well-being concerns. Methods: WBI and PWWR are promoted through communication channels, including newsletters, member engagement platform, and social media. Quantitative and qualitative data are analyzed quarterly. Programming and educational materials are developed to address common themes. A solutions-based summit identified actions to improve workplace conditions. Results: Since 2019, 15,558 individuals completed an initial WBI, and 14,885 individuals completed a reassessment. The overall national assessor distress percent is 30.7%; 31.4% for pharmacists, 28.1% for student pharmacists, and 35.2% for pharmacy technicians. The WBI distress percent by practice setting is 42.4% in community-chain pharmacies; 29.3% in community-independent pharmacies; 28.0% in health-system pharmacies; and 22.4% in academia. In 2024, 385 negative experiences were reported via PWWR. On a scale of 0 to 4 (0=none and 4=significant), 91% of experiences received a 3 or 4 rating related to increased stress and 84% of experiences received a 3 or 4 rating related to increased burnout. The solutions-based summit final report identifies transformative and actionable changes for pharmacy five workplace themes: practice advancement, mental health, workforce, regulations and requirements, and technology and workflow efficiencies. APhA-developed resources include the Pharmacist's Fundamental Responsibilities & Rights, which can be used to start conversations about pharmacy workplace issues; Zero Tolerance Flyer, which indicates a zero-tolerance policy for harassment of staff; patient code of conduct; Pharmacy Workforce Suicide Awareness Day annually in September; APhA Emotional Support Groups, which allow members to share experiences monthly; and the APhA Well-being Advisory Committee, which addresses well-being and workplace initiatives. Significance: APhA continues to utilize data from WBI and PWWR to further collaborations with external pharmacy and health care organizations, and to improve workplace conditions for pharmacists and their teams. Many of these strategies can be adapted to enhance pharmacy practice on a national level.
L-12	Rebecca Maxson, PharmD; Calvin J Meaney, PharmD; Andrew Traynor, PharmD; Tracy L. Anderson-Haag, PharmD; Wendy St. Peter, PharmD

	Advancing Kidney Health through Optimal Medication Management (AKHOMM)
	Implementing an innovative learning and action collaborative to advance comprehensive medication management for individuals with cardiovascular-kidney-metabolic syndrome With the recent American Heart Association Presidential Advisory on the urgency of addressing cardiovascular, kidney and metabolic (CKM) syndrome and the advancement of guideline directed medication therapy (GDMT) to prevent the onset and progression of CKM conditions, the opportunities for pharmacists in providing comprehensive medication management (CMM) have been amplified. The Advancing Kidney Health through Optimal Medication Management (AKHOMM) initiative is aimed at improving GDMT for people with CKM syndrome by advancing inclusion of CMM pharmacists on multidisciplinary health care teams. We designed and launched the first cohort of the AKHOMM Learning and Action Collaborative (LAC) using principles of implementation science to address this need. Objective: Utilizing a LAC, advance the practice of CMM to improve medication management and uptake of GDMT for persons with CKM via pharmacists as an integral member of the health care team. Methods: The call for participants for the first AKHOMM-LAC was sent out via national pharmacy organizations' email lists. Three virtual question and answer sessions were offered for potential participant teams. Participants were required to apply and complete an interview. Accepted teams completed a 4-month readiness phase and are in the 12-month implementation phase. Teams meet with their coaches monthly, have monthly all-team pacing events or field expert sessions, and attend three all-team milestone meetings. Progress towards each team's bold aim is tracked monthly using the LAC's self-assessment tracker. Outcomes: Seven diverse teams across the United States encompassing academic, private, primary care and nephrology practices, and clinic sites serving underserved communities joined the AKHOMM LAC in July 2024. After the 1st quarter of the implementation phase (January 2025), 28% of all critical actions for team performance were completed using the self-assessment tracker. Relevance: The rapid successes of cohort one with adding a CMM pharmacist to the health care team and working to improve GDMT adherence will encourage other sites to participate in future LAC cohorts. Given the multitude of new GDMT therapies in persons with CKM conditions, our LAC will also stimulate funding for future LACs by demonstrating how to successfully build and sustain a CMM program focused on CKM GDMT across a diversity of health care practices and patient populations. Our innovative approach using implementation science techniques will provide a roadmap for rapid integration of pharmacists to provide CMM in high risk CKM populations and data to develop future scalable models.
L-13	Nicole L McDaniel, PharmD, James L Martin, PharmD, MPH, Kristy R Crooks, PhD, Ashley Hansen, RN, BSN, Emily C Hearst, MHSA, Kaitlyn W Hess, MS, MLS, ASCP, Natalie Johnson, PharmD, David P Kao, MD, Elizabeth L Kudron, MD, MPH, Yee Ming Lee, PharmD, Elise L Shalowitz, MS, Carolyn Swartz, BSN, RN, Katy E Trinkley, PharmD, PhD(, Sharon Vandenberg, RPh, MBA, Christina L Aquilante, PharmD Colorado Center for Personalized Medicine, University of Colorado Anschutz Medical Campus, Aurora, CO, University of Colorado Skaggs

	School of Pharmacy and Pharmaceutical Sciences, Aurora, CO, University of Colorado School of Medicine, Aurora, CO, UCHealth, Aurora, CO
	Preemptive return of pharmacogenetic results from a population biobank: enhancing patient safety through asynchronous surveillance of high-risk medications Some population-scale biobanks preemptively return clinical pharmacogenomic (PGx) results to the electronic health record (EHR). An important consideration is how to handle the return of results for participants who are already receiving high-risk PGx medications but for whom the prescribing clinician did not order the PGx test nor has an automated point-of-prescribing clinical decision support alert fired yet. Here, we describe the design and outcomes of an asynchronous PGx medication surveillance protocol for participants who received PGx results from a population biobank. Methods: We designed an asynchronous (i.e., not timed with medication order or refill) automated report infrastructure using native EHR functionalities. Specifically, reports are run following release of new PGx results, and the active EHR medication lists of participants with pertinent at-risk phenotypes are screened for high-risk PGx medications. Participants identified as having potential high-risk drug-gene interactions (DGIs) are reviewed by a PGx-trained pharmacist and presented to a biobank physician at weekly rounds. For clinically relevant cases, electronic in-basket messages are sent to the prescribing clinician, notifying them of the potential DGI and alternative therapies. For this analysis, we evaluated all asynchronous reports from Apr 2022-Apr 2024, which included participants with altered metabolizer phenotypes and the following high-risk DGIs: clopidogrel/CYP2C19; fluoropyrimidines/DPYD; thiopurines/TPMT/NUDT15; and voriconazole/CYP2C19. Results: Of the 350,880 distinct PGx results returned for 55,276 biobank participants, 657 (1.2%) of participants met criteria for asynchronous screening. Of those 657 participants, 39 (5.9%) required discussion at rounds and/or a clinician in-basket message. The high-risk DGIs included: 32 (82.1%) clopidogrel/CYP2C19; 5 (12.8%) systemic fluoropyrimidines/DPYD; 1 (2.6%) azathioprine/TPMT/NUDT15; and 1 (2.6%) voriconazole/CYP2C19. Of the 25 in-basket messages sent, 14 clinicians (56%) modified drug therapy, whereas 11 (44%) continued current therapy, which was deemed appropriate given the associated clinical context. Conclusion: Overall, only 1% of biobank participants required asynchronous review of their active medications, with less than 0.1% requiring discussion at PGx rounds and/or a clinician message. These data highlight that asynchronous surveillance of high-risk PGx medications can be successfully achieved for preemptive population-scale PGx initiatives, without substantial clinical burden on the biobank program.
L-14	Logan McDermott, Lisa Smith, Cindy Perez, Lupe Govea Walmart Expanded Pharmacist Scope of Practice for Clinical Services
	Optimizing pharmacist impact through a collaborative outreach model in a primary care setting Community pharmacies are critical access points of care and are pivotal in filling the unmet need for primary care services in the United States. According to a National Association of Community Health Centers (NACHC) 2023 report, more than 100 million Americans do not have a primary care provider, with 25% of those individuals being children (2,4). This equates to one-third of Americans in this country are not being regularly screened for preventable health conditions and treated for routine medical concerns. Rural and underserved

	communities are impacted more heavily with these primary care shortages. Community pharmacy by in large is the greatest area where pharmacists enter post-graduation (5). Through a Doctor of Pharmacy education, pharmacists are trained to manage a complex array of disease states through preventative care and medication interventions (5). The United States has entered a medical crisis for patients to access quality care easily, affordably, and conveniently. With 4,600 pharmacies and 16,000 pharmacists, Walmart is well-equipped to mitigate provider shortages and serve communities (1). Purpose: This report seeks to explore how expanding Walmart pharmacists' scope of practice can enhance healthcare service access points and offerings for patients. Methods: Walmart corporate teams reviewed state and federal rules and regulations to implement and deliver expanded pharmacy health services. These services included testing and treatment for influenza, streptococcus, and SARS-CoV-2, pharmacist-prescribed hormonal contraceptives, and stigma-free human immunodeficiency virus testing and care. Outcomes: Walmart has delivered testing and treatment services for influenza, streptococcus, and SARS-CoV-2 in 21 states (7). Additionally, for pharmacist-prescribed hormonal contraceptives, Walmart has released this service in 32 states (6). Furthermore, stigma-free human immunodeficiency virus testing is in 2 states and specialized HIV care has launched in 12 states (3,8). Significance/Implications/Relevance: The United States is amid a healthcare crisis worsening due to provider shortages. In this country, 90% of Americans live within a 10-mile radius of a Walmart (1). Walmart has the infrastructure to allow pharmacists to step into primary care roles supporting patients through this provider shortage. With a workforce of 16,000 pharmacists, Walmart is able to allow patients to receive essential care conveniently and affordably when they may not have received care otherwise.
L-15	Ashley Meredith, Sally Rafie, Jackie Campi, Jenny Newlon Purdue University/Birth Control Pharmacist
	Creation of a digital community of practice to support pharmacist contraception prescribing The landscape of pharmacy practice continues to evolve, requiring adaptation among pharmacists. Over the past decade, more than half of US states have authorized pharmacists to prescribe contraception. Adoption of this new service has been slower than desired. Pharmacists desire community building, training, and technical assistance to guide implementation of contraception prescribing. Creation of a professional community of practice (CoP) has been shown to successfully support pharmacists providing family planning care in Canada and another CoP supporting reproductive health services in Australia is currently being evaluated. Our CoP focuses on the unique needs and challenges faced by pharmacists who provide contraception care or would like to. Objectives/Purpose: The primary objective is to describe the development of a web-based CoP for pharmacists who prescribe birth control. The CoP aims to be a supportive and educational environment to allow pharmacists, pharmacy students, and partners to learn and share with peers about contraception care best practices, patient care strategies, regulatory changes, and operational and business considerations, including workflow and billing. Methods: Building on preliminary research, the digital CoP was designed to focus on connection, education, and technical assistance to aid implementation. Content experts and an instructional designer created content that is engaging and tailored to meet the specific learning needs of pharmacists.

	Results/Outcomes: A digital CoP has been implemented at BirthControlPharmacist.com. Resources to support connection include discussion boards, a stakeholder directory, and live programming. Education is provided through live and home study continuing education programs, podcasts, and clinical resources (e.g.; contraceptive product information, side effect management, etc.). Technical assistance for implementation is supported through template clinical documentation forms (e.g.; self-screening questionnaire, visit documentation, visit summary), personalizable marketing materials, and example pharmacy staff workflows. Significance/Implications/Relevance: By providing a structured, yet adaptable, platform for education and community building, the CoP can enhance pharmacists' and students' ability to provide high-quality contraception prescribing. Additionally, the CoP aims to be adaptable to feedback and research outcomes, which allows for inclusion of additional patient care topics as pharmacy practice evolves. This initiative underscores the importance of supporting continuous professional development to allow pharmacists to feel comfortable when adapting to new aspects of pharmacy practice.
L-16	Faria Munir, PharmD, BCPS, MS, Heather Ipema, PharmD, BCPS, Rahul Nohria, PharmD, Divita Singh, PharmD, BCPS, BCACP University of Illinois Chicago Retzky College of Pharmacy, University of Illinois Chicago Retzky College of Pharmacy, Larkin University College of Pharmacy, Temple University School of Pharmacy
	Change in Pharmacy Student Perceptions of Generative Artificial Intelligence After a ChatGPT-based Drug Information Activity There is growing support for teaching pharmacy students how to become literate about generative artificial intelligence (AI) and how to use it responsibly. Data on the effect of AI-driven activities on pharmacy student knowledge, misconceptions, and uncertainties would offer essential insights in how to design and incorporate these activities in pharmacy curricula. Objectives/Purpose: The current study assessed pharmacy students' perceptions about their professional and personal use of ChatGPT before and after participation in a ChatGPT-based drug information activity. Methods: In 2024, students at three different colleges of pharmacy completed a baseline and post-activity survey on their perceptions of ChatGPT including its reliability, usefulness, and impact on academic performance and critical thinking. The survey was a modified version of the TAME-ChatGPT assessment that used a 5-point Likert scale. After the baseline survey, students answered clinically relevant drug information questions on their own using primary or tertiary resources and compared their answers with ChatGPT responses. Independent t-test samples were used to compare baseline and post-activity surveys. Results/Outcomes: A total of 227 students completed the pre-survey and 203 students completed the post-survey. Students' concerns about the reliability of ChatGPT increased after completing the drug information activity (pre-survey: 3.57 ± 0.96; post-survey: 3.88 ± 1.11; p=0.00221). Students' concerns about reliance on ChatGPT and prevention of critical thinking increased (pre-survey: 3.30 ± 1.34; post-survey: 3.57 ± 1.21; p=0.03055). The following areas decreased after the activity: enthusiasm about ChatGPT as learning and research tool (pre-survey: 3.60±1.02; post-survey: 3.31±1.18; p=.00826), viewing ChatGPT as an important tool for academic success (pre-survey: 3.40±1.13; post-survey: 3.12±1.23; p=.01546), and concern regarding ChatGPT's potential for plagiarism (pre-survey: 4.12±0.96; post-survey: 3.91±1.10; p=.0306).Fewer students stated that they would recommend ChatGPT to colleagues post-activity (p < 0.001).

	Common themes in open-ended survey questions included skepticism and partial trust in ChatGPT, with frequent mentions of the words "not very reliable". Significance/Implications/Relevance: After a hands-on ChatGPT-based learning activity, pharmacy students reported increased concerns about reliability and reliance on information that may hinder their own critical thinking. The results of this study may encourage pharmacy educators to implement classroom activities for active exploration of the benefits and challenges of generative AI. Pharmacy educators must continue to explore effective instructional methods to provide students with exposure to disruptive and emerging technologies that will affect pharmacy practice in the future.
L-17	Nardine Nakhla, Rosemary Killeen, Kenny Chong, Kathy Tam, Ruth Ackerman, and Jen Belcher University of Waterloo School of Pharmacy, Waterloo, Ontario, Canada & The Ontario Pharmacists Association
	Minor Ailments, Major Impact: Small Group Learning to Build Confidence in Ontario Pharmacy Practice Pharmacists in the province of Ontario, Canada received prescriptive authority for minor ailments (MA) in January 2023. The University of Waterloo School of Pharmacy and the Ontario Pharmacists Association supported this scope expansion through co-developed self-directed, online educational modules. While initial implementation of MA services has occurred, adoption and delivery patterns vary across the province. With regulatory approval pending for 14 additional conditions, assessing pharmacy team members' confidence in providing MA services became crucial for developing any supplemental training or tools required to support meeting the needs of the population. Objectives/Purpose: The legislation enabling Ontario pharmacists to prescribe medications for minor ailments (MA) was enacted to enhance the provision of primary care services in a time of health human resource shortages. Our educational programming, both the initial self-study modules and the interactive workshop, has been designed to share best practices with practitioners to facilitate building confidence and the consistent application of an ever-broadening scope of practice for pharmacy professionals. Based on patterns in other Canadian jurisdictions, this process of health professional scope expansion is not yet completed, so establishing evidence-based strategies for effective education for practicing professionals would seem to be a requirement to facilitate building confidence and consistency with these "scope expansions." Some of our previously developed programming has been adapted and utilized by pharmacy organizations in other jurisdictions. Methods: Ontario pharmacists and pharmacy technicians involved in MA service delivery were invited to participate in a small group, in-person workshop. The workshop featured synchronous and asynchronous components, combining interactive discussions with didactic instruction on service implementation and optimization. Anonymous pre-and post-workshop surveys assessed participants' confidence levels in MA service delivery and evaluated the workshop's impact on their practice. Results/Outcomes: Survey responses indicated at baseline, self-reported confidence in providing MA services was not optimal. Post-workshop, a significant increase in participants' self-reported confidence in delivering minor ailment services was noted ($p < 0.05$). Workshop feedback was overwhelmingly positive, with participants valuing the small group discussions in a "safe space" environment, practical guidance on audit preparation, and strategies for optimizing pharmacy team involvement in service delivery. Significance/Implications/Relevance: Facilitated small group learning, including

	discussion and provision of tailored content, along with live demonstration of comprehensive tools and peer interaction, effectively enhance pharmacist and pharmacy technician confidence in delivering minor ailment services. This educational approach provides a framework for supporting pharmacy practice expansion as additional conditions are approved for pharmacist prescribing in Ontario, Canada.
L-18	Brittany Norton, PharmD Kirsten Balano, PharmD University of California San Francisco, School of Pharmacy
	Finding Water in the Pharmacy Desert Only 12% of pharmacists practice in rural and non-urban areas, despite 15-20% of Americans living in rural areas. Many rural communities struggle to recruit pharmacists, particularly as existing pharmacists near retirement. This has led to the creation of many pharmacy deserts, where patients have minimal to no access to pharmacy services. Objectives: This session aims to demonstrate that initiating pharmacy student programs and residency programs in rural areas and pharmacy deserts can lead to sustainable workforce development. Additionally, these programs can showcase the expanded roles of pharmacists. Methods: A literature review of rural health websites and publications was conducted. Additionally, the UCSF School of Pharmacy has implemented experiential programs in rural areas of California, including North Bay and Central Valley counties. Best practices from UCSF School of Pharmacy for implementing experiential programs in resource-limited areas will be shared. Outcomes: In rural communities that offer APPE rotations for pharmacy students or create residency programs, there is an increased retention rate in these areas. One such program in South Dakota found that 70% of pharmacy students who participated in the rural program remained in South Dakota, with 30% of them choosing to practice in rural areas after graduation. Another program in Wisconsin utilizes these rural students to assist with long-term patient projects, which helps free up staff time and provides valuable hands-on experiences for students. UCSF has utilized interprofessional preceptors to support the experiential programs in resource-limited areas. Physician, Nurse Practitioner, and Physician Assistant residency programs have partnered with Schools of Pharmacy to build innovative interprofessional learning environments. Significance: Many sites may be hesitant to take on students due to fears about increased workload and insufficient staff to precept. However, it is worth exploring this opportunity in rural areas. Pharmacy students can be precepted by not only pharmacists but also by other professionals. Additionally, precepting students can extend pharmacy services and create a sense of professional fulfillment, which can reduce feelings of burnout. Having students in rural areas not only maintains the existing pharmacy workforce but also creates a pipeline for future pharmacists in these areas.
L-19	Jacob Rogers, Pharm.D., BCACP Keri Christensen, Ph.D. University of North Texas Health Science Center College of Pharmacy, HSC Health Center for Older Adults
	Impacts of Early Exposure to Geriatric Patient Care on Pharmacy Students Education First year pharmacy students at the University of North Texas Health Science Center College of Pharmacy participate in the Seniors Assisting in Geriatric Education (SAGE) Program. The SAGE Program is an innovative program that groups preclinical students across 8 health care disciplines with a volunteer older adult. The mission of the program is to strengthen health professions students'

	interprofessional medical education through the care of older adults. Students complete a series of visits with their team in the mentor's home to practice these foundational skills. Objectives/Purpose: The impact of the SAGE Program on interprofessional teamwork has previously been published. However, the impact of early exposure to geriatric care in pharmacy education has not previously been documented. To address this gap, the objective of this study is to review SAGE Program survey data to identify the impact of early exposure to geriatric education on pharmacy students. A secondary objective is to evaluate the pharmacy student's perceived value of SAGE on their future practice. Methods: As part of the SAGE Program, students complete a survey that asks student perceptions of their knowledge before and after each in-home visit. The targeted questions for review in this study consist of the following on a 5-point Likert Scale: students' ability to conduct medication assessment, interprofessional communication, change in attitudes towards older adults, and change in knowledge of health team needs. Results/Outcomes: Since its inception in 2009, the SAGE Program has received local and national recognition for preparing the next generation of healthcare professionals in geriatric-focused care. Previous publications on the SAGE program show a positive impact on interprofessional practice and attitudes towards older adults. This study anticipates a similar outcome in relation to geriatric care. Early evaluations of post-program survey data show a positive impact on pharmacy students' ability to confidently complete a medication assessment and recognizing the value for team-based approach to geriatrics. Significance: In 2034, the older adult population will outnumber children under 18 years old for the first time in U.S. history. By 2050, older adults are projected to make up at least 22% of the U.S. population. Older adults have a high prevalence of chronic diseases and are thus taking numerous prescriptions and over-the-counter medications daily. One in five medications taken by older adults may be inappropriate or unnecessary. Pharmacists are uniquely positioned to help older adults mitigate adverse drug events and the burdens of polypharmacy.
L-20	Mollie Ashe Scott, Pharm.D., BCACP, CPP, FASHP, FNCAP Amanda Savage, Pharm.D. Macary Marciniak, Pharm.D., BCPS, FAPhA Jill Sergison, CNM UNC Eshelman School of Pharmacy, UNC School of Medicine UNC Eshelman School of Pharmacy, Points True North
	Interprofessional Collaboration and Coalition-Building: Implementation of Pharmacist-Prescribed Hormonal Contraception in North Carolina One in four women experience barriers to hormonal contraception access, and maternal mortality is increasing, particularly in women of color. Thirty states and the District of Columbia currently allow pharmacists to prescribe hormonal contraception under collaborative practice agreement, standing order, or statewide protocol. In 2021, North Carolina (NC) passed legislation that allows pharmacists to initiate hormonal contraceptive pills and patches. Objectives: This poster will describe how a diverse group of stakeholders collaborated to implement pharmacist-prescribed contraception and report uptake of pharmacist-prescribed hormonal contraception across NC. Methods: Coalition Building and Payment. A Contraception Summit was held in Chapel Hill that engaged over 80 stakeholders to identify strategies for successful implementation. NC Medicaid established a credentialing and payment process to allow contraception pharmacists to become providers and

	bill for clinical pharmacy services. Marketing: Points True North led a campaign including a statewide logo, social media ads and marketing materials to advertise pharmacist-prescribed hormonal contraception to patients. NCAP created an online tool entitled NC Pharmacy Finder where health care professionals, stakeholders, and the public can search to find a pharmacy in their community that provides hormonal contraception. Evaluation of Uptake: Descriptive data about uptake of contraception services included number of pharmacists trained as birth control pharmacists, number of pharmacists credentialed by NC Medicaid as birth control providers, and number of NC counties with a birth control pharmacy providing contraception services. Data about trained and credentialed pharmacists was reported by NCAP and NC Medicaid. Each trained pharmacist was contacted by phone to determine if they were providing contraception services and pharmacy locations were mapped by NC county. Results: Currently 1666 pharmacists have completed the NCAP training, 1464 pharmacists are recognized as contraception providers under Medicaid, and 93% of NC counties have a pharmacy that provides hormonal contraception services. Significance: Implementation of pharmacist-prescribed hormonal contraception in NC was informed by a robust number of diverse stakeholders representing academia, research, legislators, pharmacy, medicine, reproductive health, reproductive justice, public health, Medicaid, and local communities. This interprofessional collaboration and coalition building supported successful implementation efforts.
L-21	Marie Smith, PharmD, FNAP Mary Mulrooney, PharmD, MBA University of Connecticut School of Pharmacy
	Pharmacist Impact on Provider Workload Burden and Patient Access: Primary Care and Population Health Teams A pharmacist's expertise in medication optimization, management, and monitoring is complementary to primary care providers (PCP) skillsets. A challenge remains to determine the optimal pharmacist practice model in primary care settings and population health teams to offset PCP clinical workload burden and improve patient access to PCP appointments. OBJECTIVES: The objectives of this study were to estimate the impact of integrated pharmacist services on: (1) PCP workload burden, and (2) additional PCP-patient visits to alleviate patient access challenges. METHODS: The PCImpact model was developed/tested with primary care leaders and clinicians in a statewide federally qualified health center and large health system-affiliated medical group. PCImpact was applied to 2 common pharmacist practice models – population health team (PH) or direct patient care (DPC). The PH pharmacist performed one-time, comprehensive medication reviews using EHRs (no direct patient interaction). PCPs reviewed and implemented PH pharmacist recommendations. In the DPC model, an embedded PC pharmacist had written collaborative practice agreements (CPAs) with PCPs. CPAs allowed the pharmacist to assess medication regimens, implement needed changes, and order follow-up lab tests without requiring PCP implementation. Site-specific data inputs were obtained through onsite workflow mapping and reviewed with organizational leaders/clinicians. PCImpact outputs were: (1) pharmacist workload capacity, (2) PCP time saved or required for implementation of pharmacist recommendations, and (3) pharmacist impact on opening additional PCP-patient appointments. RESULTS: Pharmacists can conduct 2,304 one-time patient medication reviews in a PH model. In the DPC model, the pharmacist can conduct 640 patient encounters since initial and follow-up patient visits are longitudinal until the

	patients' drug therapy problems are resolved. The PH practice model adds 384 hours to the PCP workload per year since the PCP needs to review and implement the pharmacist's recommendations for drug therapy changes/monitoring tests. In the DPC model, there is a 640-hour PCP workload reduction since pharmacists use a collaborative practice agreement (CPA) to implement necessary drug therapy changes/monitoring tests without requiring PCP review and approval. This leads to opening up 1,920 PCP appointments per year for patients who have immediate care needs. IMPLICATIONS: Additional PCP workload is required to review/implement pharmacists' recommendations in the PH model. Expanding primary care teams with pharmacists using a DPC model and CPAs can reduce PCP clinical workload burden, and open up PCP visits for greater patient access. Patient access can be improved by opening up PCP appointments as a result of shifting patients with medication optimization and management needs to the pharmacist.
L-22	Wendy St. Peter, Chi-Han Cheng, Lindsay Sorge, Debbie Pestka, Omolayo Umaru, Hadley Dowell, Kate Dryden, Joshua J. Neumiller Department of Pharmaceutical Care & Health Systems, College of Pharmacy, University of Minnesota, Department of Pharmacotherapy, College of Pharmacy and Pharmaceutical Sciences, Washington State University, Goucher College.
	Assessing Readiness for Pharmacist-Led Cardiovascular-Kidney-Metabolic Comprehensive Medication Management Across Five Academic Health Systems Despite the emergence of breakthrough therapies in cardiovascular-kidney-metabolic (CKM) care in recent years, their uptake remains suboptimal, even though they are widely recommended in clinical guidelines. Persistent care gaps leading to suboptimal use of guideline-directed medical therapy (GDMT) stem from fragmented clinical workflows across specialties, a siloed management approach to complex CKM conditions, therapeutic inertia, disparities in medication use, and patient-level challenges in managing complex medication regimens. Addressing these gaps requires novel, team-based, patient-centered comprehensive medication management (CMM) approaches to promote initiation of GDMT, optimize medication use, and improve outcomes for patients with CKM conditions. As integral members of the multidisciplinary care team, pharmacists can enhance the adoption of GDMT through pharmacist-led CMM interventions. Objectives/Purpose: This study aimed to assess the readiness for implementation of a standardized CKM-CMM optimization intervention led by pharmacists across diverse academic healthcare systems in the US using a mixed-methods approach. Methods: A quantitative survey study was conducted within five academic health systems across the US to characterize and understand organizational readiness to implement CKM-CMM. Participants included clinical pharmacists, pharmacist administrators, and prescribers. The readiness survey assessed three core components: motivation (desire to implement CKM-CMM), general capacity (overall functioning of the organization), and innovation-specific capacity (resources and processes to implement CKM-CMM). The percentage of identified challenges and strengths was analyzed across these 3 groups of practitioners. Results/Outcomes: A total of 44 healthcare professionals participated in the survey: 18 clinical pharmacists, 4 pharmacist administrators, 22 prescribers. Overall, among the 18 domains assessed, lack of necessary support (79.5%) emerged as the most significant challenge for CKM-CMM implementation,

	followed by CMM service visibility (63.6%), priority (61.4%), and insufficient resources and processes (61.4%). When analyzed by healthcare provider groups, pharmacists reported lack of necessary support (81.8%), CMM service visibility (68.2%), insufficient resources and processes (63.6%), and priority (59.1%) as the most notable challenges to CKM-CMM implementation. Prescribers also identified lack of necessary support (76.2%) as the primary challenge, followed by priority (61.9%) and ease of implementation (61.9%). Significance/Implications/Relevance: This study provides a comprehensive assessment of readiness for implementing pharmacist-led CKM-CMM programs across 5 diverse health care systems. Findings will guide the development of a CKM-focused CMM Change Package to support future implementation. Additionally, insights gained from this study will contribute to advancing pharmacy practice by identifying workforce development needs, optimizing patient-centered care, and ensuring financial sustainability in an evolving healthcare landscape.
	ACCEPTED ABSTRACTS
	Ephrem Abebe, BPharm, MS, PhD; Tanner Sergesketter, RN, BSN; Furqan Kazi, PharmD, MS; Yejin Seo, PharmD, MS; Emily Israel, PharmD, BCPS, BCPPS Purdue University College of Pharmacy
	Envisioning Medication Safety Systems at Home that Support Family Caregivers of Medically Complex Children Children with medical complexity (CMC) represent a medically fragile group of pediatric patients characterized by intensive healthcare needs, and use of multiple and complex medication regimens. Owing to advances in therapeutics, a growing number of them are surviving into adolescence and adulthood. While this has been hailed as a great medical success story, an increase in caregiving burden has been documented among family caregivers caring for such children in the home setting, including tasks involving complex medication regimens. Objectives: To describe family caregiver developed systems to manage medications in the home environment and identify opportunities for designing systems to support safe medication management for CMC. Methods: The work being presented here is part of a federally funded study using mixed methods design to identify medication safety risks during the hospital to home transition period, and design and evaluate a prototype tool to support safe medication management in the home setting. For the present study, family caregivers of CMC were recruited from a tertiary care children's hospital in central Indiana, participated in three rounds of semi-structured interviews along with photography-assisted observations conducted in their home environment. Results: A total of 20 family caregivers caring for CMC ranging from 2 weeks old through 17 years were included in the study. Following discharge, families struggled to adapt to the new routine involving medications and other healthcare tasks. With time, family caregivers developed their own systems to support their work managing medications and other healthcare tasks, with varying levels of sophistication. Broadly, we identified three core functions in family caregiver home systems: 1) Information management: families created or adapted tools to keep track of medication and feeding administration, medication refills, and visits to healthcare facilities; documented care experiences; shared information with family members and close friends 2)

	Product management: families developed systems to store and track medications, feeding supplies, and medical devices; 3) Care process management: families developed a process to prepare medication doses, including strategies to simplify multi-step and complicated tasks involving liquid medications. Additional details will be presented through photography. Implications: Pharmacists and other professionals are often unaware of what transpires in the home environment. Medication practices and systems developed by family caregivers provide valuable insights to identify safety risks, and develop interventions. This also provides new avenues for the pharmacy profession to develop innovative practice models that meet the medication management needs of medically complex children and their family caregivers.
	Kenya Anderson NewYork Presbyterian - Weill Cornell
	Future-Proofing the Pharmacy Workforce for Financial Stability and System Resilience The evolving landscape of healthcare demands a pharmacy workforce that is not only clinically adept but also financially stable and adaptable to dynamic system changes. Traditional pharmacy roles have been financially constrained by reimbursement models that do not fully capture pharmacists' contributions. As healthcare systems shift towards value-based care, innovative training programs and policy reforms are necessary to ensure long-term sustainability and resilience in the profession. Objectives/Purpose: This study aims to explore strategies to future-proof the pharmacy workforce by integrating financial stability, career diversification, and adaptability into education, workforce planning, and professional development. The objective is to identify policies and training models that enhance economic resilience while maintaining high standards of patient care. Methods: A literature review of existing workforce models, compensation structures, and training programs was conducted to identify trends in financial sustainability and career diversification. Key stakeholders, including pharmacy educators, healthcare administrators, and practicing pharmacists, provided insights through surveys and interviews to assess current gaps and potential solutions. Results/Outcomes: Findings suggest that shifting compensation models towards value-based payment structures can better recognize pharmacists' contributions to preventive care, chronic disease management, and interdisciplinary collaboration. Expanding pharmacists' roles in public health, digital health, pharmacogenomics, and telepharmacy creates diverse career pathways that mitigate financial volatility and promote job security. Additionally, integrating business and leadership training into pharmacy education enhances financial literacy and empowers pharmacists to establish sustainable practices and innovative service models. Significance/Implications/Relevance: A financially stable pharmacy workforce is critical to ensuring the profession remains agile amid healthcare system changes. Collaboration between academia, healthcare institutions, and policymakers is essential to developing curricula and career pathways that support financial resilience. By proactively investing in workforce stability, the pharmacy profession can navigate economic uncertainties, continue to advance patient care, and optimize health outcomes in an evolving healthcare environment.
	Jolene Bostwick, Kelly Gable, Suzanne Harris

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	Combating stigma through contact-based education of doctor of pharmacy students Patients with mental illnesses are at risk for interpersonal, self, and structural stigma. Stigma may result in discrimination, which directly opposes the "Oath of a Pharmacist." Enhancing pharmacy school curricula, through contact-based education, is one of the best methods to reduce stigma. Given public health issues, frequency of psychotropic medication use, and pharmacists' frequent encounters with individuals living with mental illness, evidence-based psychiatry education through contact-based education is essential to combat stigma and discrimination. Objectives/Purpose: This abstract explores the importance of de-stigmatization of mental illness and the impact pharmacists can have in the lives of these patients. Further, the authors seek to describe experiences programs can implement within their curriculum to enhance student training in exposure and knowledge about mental illnesses. Methods: This abstract includes a brief review of published outcomes of contact-based education and several examples of contact-based education within psychiatry curricula implemented at three different schools of pharmacy. Results/Outcomes: Published data on contact-based education provides evidence for decreased stigma and reduced social distance. Specific examples implemented by psychiatric pharmacists will be shared in more detail. Introducing Mental Health First Aid to pharmacy students early in the curriculum can be a starting point in raising awareness and beginning a conversation on the impact of stigma. Moving beyond required didactic coursework, pharmacy students within these three programs can experience more contact-based stigma-reducing activities and learning within mental health and addiction-focused elective courses, independent studies, student organization involvement, and through psychiatric specialization opportunities. Examples of contact-based experiences include visiting mental health clinical practice sites, interviewing patients, attending community peer support groups (e.g. AA, NA), participation in a poverty simulation, engaging with guest speakers with lived experiences, and connecting with local National Alliance on Mental Illness (NAMI) chapter leaders. Peer-to-peer engagement and advocacy also occurs through American Association of Psychiatric Pharmacists student chapters at community events such as National Suicide Prevention Week and 988 Day. As students progress through their curriculum, more advanced experiential learning opportunities include participation with an interdisciplinary team caring for patients across medical and mental health treatment environments. Significance/Implications/Relevance: Contact-based education is a vital component of pharmacy education, helping to better prepare trainees to meet the needs of patients living with mental illnesses, in both generalized and specialized practices, including psychiatric pharmacy. Other programs would benefit from implementing the strategies discussed to support de-stigmatization of mental illness to improve patient lives.
	Maria Charles, Nam Hoang, Emily Hom, Amy Hwang, Isaac Yeoh, Joanne Chun, and Jeff Lin University of California San Francisco, School of Pharmacy
	Tiny Patients, Big Answers: AI's Role in Explaining Medicine to Kids One of the key challenges for pharmacists is effectively communicating dosing regimens and the importance of compliance within pediatric populations.

	Children often lack full agency in their decision-making and may not understand the purpose of medications, which can lead to negative perceptions or confusion. This disconnect between children, parents, and clinicians can hinder treatment adherence. To improve communication, it is essential to present medical information in a way that is both accessible and engaging. Medications are crucial for treating various conditions in children, and helping them understand their role can reduce stress and improve adherence. Objective/Purpose: This project aims to improve pediatric understanding of medication, fostering greater autonomy and agency over their health. Children often struggle to comprehend therapeutic information, and a chatbot designed as a familiar cartoon character could help standardize and simplify these conversations. By making medications less intimidating, the chatbot could reduce anxiety, and improve adherence. Large language models like ChatGPT have shown promise in translating complex concepts into accessible language, and we believe this same technology can bridge the gap between pharmacists and pediatric patients, ultimately improving patient outcomes. Methods: We developed our chatbot using Mistral AI's platform and created a chatbot personality based on the popular children's TV show character, Bluey, where complex medications, medical conditions, and therapies can be explained to children in a friendly and engaging way. A system prompt was written to define parameters such as context, objective, tone, and audience, ensuring clinical accuracy, safety, and adherence to UCSF's standards. Few-shot learning techniques were used to guide responses, helping "Bluey" to learn patterns from examples without extensive retraining. This allowed the Bluey chatbot to mimic Bluey's speech and personality, simplify complex concepts into child-friendly explanations, handle unclear or unsafe questioning, and ensure clinical accuracy. Results/Outcomes: The Bluey chatbot has been tested with pharmacists, receiving enthusiastic feedback. It mimics Bluey's playful tone, effectively simplifies medication concepts, prevents age-inappropriate content, and holds promise to engage pediatric patients and improve communication. Significance/Implications/Relevance: Research shows that improving medication understanding leads to better adherence and reduced anxiety. This first-of-its-kind implementation can expand to support multilingual capabilities and characters from international communities, making medication education more inclusive for underrepresented pediatric populations. Our chatbot represents the first step towards bridging the communication gap between pediatric patients and pharmacy providers, and carries the potential to transform how children engage with healthcare, paving a more interconnected healthcare system for all.
	Maisara M. Chowdhury, Christine Formea, Carrie C. Hoefer University at Buffalo, Children's Hospital Colorado, Standardizing Laboratory Practices in Pharmacogenomics (STRIPE)
	Role of Interprofessional Events in Advancing the Field of Pharmacogenomics Pharmacogenomics (PGx) has proven to be a vital tool in healthcare, however, the lack of educational standardization makes it difficult for healthcare professionals to utilize its full potential. There is an abundance of variation of PGx educational content across healthcare fields, including nursing, pharmacy, and medical schools. Objectives/Purpose: While the standardization of PGx education across healthcare disciplines is crucial, the delivery methods are just as critical for benefiting pre-healthcare students. One of the most successful ways to

	disseminate PGx education is by hosting interprofessional education (IPE) events, which promote communication and collaboration between students of different healthcare professions, mimicking the healthcare environment. Methods: This past year, the Standardizing Laboratory Practices in Pharmacogenomics (STRIPE) organization brought together experts from diverse professional backgrounds in pharmacogenomics (PGx) to address various challenges in clinical practice, laboratory procedures, study design, clinical decision support, and education. The STRIPE education team facilitated small group discussions with healthcare professionals to identify key concerns, particularly the scarcity of PGx interprofessional education (IPE) events. Results/Outcomes: These discussions led to the formation of consensus statements aimed at supporting educational initiatives. These statements were then presented to all workshop groups, and a vote was conducted to confirm consensus as a first step to establish a gold standard for IPE events in healthcare education. Significance/Implications/Relevance: This work emphasizes next-generation training programs in healthcare fields such as Pharmacy. These consensus statements aim to standardize and improve PGx education, ensuring healthcare professionals are better equipped to utilize PGx in clinical practice.
	Liza Claus, Jennifer Trujillo, Joe Saseen, Bryn Lindley, Emily Zadvorny, Gina Moore University of Colorado Skaggs School of Pharmacy and Pharmaceutical Sciences
	Bridging Education to Practice Through Colorado Statewide Protocols Children with medical complexity (CMC) represent a medically fragile group of pediatric patients characterized by intensive healthcare needs, and use of multiple and complex medication regimens. Owing to advances in therapeutics, a growing number of them are surviving into adolescence and adulthood. While this has been hailed as a great medical success story, an increase in caregiving burden has been documented among family caregivers caring for such children in the home setting, including tasks involving complex medication regimens. Objectives: To describe family caregiver developed systems to manage medications in the home environment and identify opportunities for designing systems to support safe medication management for CMC. Methods: The work being presented here is part of a federally funded study using mixed methods design to identify medication safety risks during the hospital to home transition period, and design and evaluate a prototype tool to support safe medication management in the home setting. For the present study, family caregivers of CMC were recruited from a tertiary care children's hospital in central Indiana, participated in three rounds of semi-structured interviews along with photography-assisted observations conducted in their home environment. Results: A total of 20 family caregivers caring for CMC ranging from 2 weeks old through 17 years were included in the study. Following discharge, families struggled to adapt to the new routine involving medications and other healthcare tasks. With time, family caregivers developed their own systems to support their work managing medications and other healthcare tasks, with varying levels of sophistication. Broadly, we identified three core functions in family caregiver home systems: 1) Information management: families created or adapted tools to keep track of medication and feeding administration, medication refills, and visits to healthcare facilities; documented care experiences; shared information with family members and close friends 2) Product management: families developed systems to store and track medications, feeding supplies, and medical devices; 3) Care process

	management: families developed a process to prepare medication doses, including strategies to simplify multi-step and complicated tasks involving liquid medications. Additional details will be presented through photography. Implications: Pharmacists and other professionals are often unaware of what transpires in the home environment. Medication practices and systems developed by family caregivers provide valuable insights to identify safety risks, and develop interventions. This also provides new avenues for the pharmacy profession to develop innovative practice models that meet the medication management needs of medically complex children and their family caregivers.
	Abigail Elmes-Patel, PharmD, MHPE Dave Jimenez, PhD Stockton Mayer, DO Albert Murphy, MPH Chintan Patel, PharmD Amina Gassam, PharmD Toni Martinford, PharmD Leyla Rashid, PharmD Sarah Messmer, MD University of Illinois Chicago Herbert and Carol Retzky College of Pharmacy, University of Illinois Chicago School of Public Health, University of Illinois College of Medicine at Chicago "
	Recovery on the Go: The Pharmacist's Role in Providing Low-Barrier Buprenorphine from a Medical Mobile Unit in Chicago In 2023, one third of the emergency responses for opioid-related overdose in Chicago were concentrated in just five neighborhoods on the West Side. High opioid overdose rates coupled with significant disparities in preventable hospitalizations and outpatient care utilization underscore a dire need for expanding healthcare access. In 2021, the Community Outreach Intervention Projects (COIP) launched a multidisciplinary medical mobile unit (MMU), including pharmacists, offering hyperlocal harm reduction, primary care, wound care, and medication-assisted recovery via low-threshold buprenorphine. In 2022, through collaboration with an opioid treatment program, the MMU began directly dispensing premade packs of buprenorphine films, offering up to 24 mg daily. The pharmacist provides prescription drug monitoring, COVID-19 testing and vaccination, medication counseling, and buprenorphine dispensing. Objectives/Purpose: To assess the utilization of an MMU providing targeted interventions to Chicago communities most impacted by opioid overdose. Methods: This retrospective cohort study was conducted via chart review including patients seen by the MMU between May 1, 2021 and December 31, 2024. Primary outcomes included the patient demographics and services provided. Secondary outcomes included patient-reported substance use history and reasons for not dispensing buprenorphine. Results/Outcomes: A total of 1,599 individual patients were seen across 4,418 visits. The typical patient was Black (59.6%, n=953), male (68.5%, n=1,095), 46.4 years old (mean, SD 12.3), and insured by Medicaid (52.9%, n=846). Common services were buprenorphine (75.6%, n=3,338), medication refill (11.5%, n=509), wound care (10.1%, n=448), COVID-19 vaccination (9.9%, n=436), and COVID-19 testing (4.8%, n=212). Of the 1,010 patients seen for buprenorphine, 47% returned to the MMU for follow-up. About 74.1% of patients used opioids via insufflation only, 16.9% via multiple routes, and 7.2% via injection only. Nearly 92% had documented polysubstance use. When buprenorphine became available, 84.2% of patients (n=602) received buprenorphine across 2,273 visits. The most common reasons for not dispensing buprenorphine included indication for longer duration (28.3%, n=202), indication for shorter duration (6.7%, n=48), and premade pack dosing was inappropriate for the individual (11.1%, n=79). Significance/Implications/Relevance: The demographics of patients seen on the MMU closely reflect that of the populations most in need of services on Chicago's West Side, highlighting the MMU's success in reaching the target

	population. The community's acceptability and reliance on the MMU is evident with nearly half of those receiving buprenorphine returning for follow-up. Through multidisciplinary collaboration, pharmacists play a critical role in broadening access to lifesaving care with buprenorphine and wrap-around services in underserved communities.
	Meagan Garza, PharmD University of Texas at Austin College of Pharmacy
	Beyond Human Health: Integrating One Health Principles in Pharmacy Education The One Health approach recognizes that the health of humans, animals, plants, and our shared environment are interconnected. Almost 20 years ago, veterinarians jumped at the opportunity to lead a One Health renaissance with the support of medical and public health professional organizations. Since then, medical and public health professionals have successfully integrated a One Health approach into their education, clinical practice, and research. Pharmacy professionals have not properly recognized their role in improving health outcomes across human, animal, and plant ecosystems: a professional imperative that can no longer be neglected. Objective/Purpose: To crosswalk One Health competency tools with PharmD program accreditation standards to reveal areas of opportunity for integrating One Health principles into the curricula. Thus, this study aims to identify gaps in pharmacist education and training necessary to equip the next generation with the skills, knowledge, and systems-thinking to adapt and address complex health challenges. Methods: The Network for Ecohealth and One Health (NEOH) One Health Core Competencies and the One Health Educational Framework for Health Professional Students developed by the Association of American Veterinary Medical Colleges (AAVMC) in collaboration with the Association for Prevention Teaching and Research (APTR) were selected as competency tools to crosswalk against the American Association of Colleges of Pharmacy's Curriculum Outcomes and Entrustable Professional Activities (COEPA), 2022. Results/Outcomes: The study is in progress. As the crosswalk is completed, it is anticipated to reveal how well-positioned pharmacists are to lead and collaborate on One Health initiatives. Significance/Implications/Relevance: Once finalized, this crosswalk can serve as a tool for PharmD programs to map their curriculum and identify opportunities to integrate One Health principles. Defining the role of pharmacists beyond human health will innovate pharmacy practice and education, resulting in a more attractive profession and a more collaborative and resilient workforce.
	Katherine Gruenberg, Ladan Karim-Nejad, Hayley Blackburn University of California San Francisco School of Pharmacy, Sustainable Pharmacy Project, University of Montana Skaggs School of Pharmacy
	Advancing Pharmacy Training by Engaging Students in Climate-Health Education Climate change impacts human health, healthcare systems, and health equity. Despite these effects, few U.S. pharmacy programs incorporate climate-health concepts within their curricula. Educating future pharmacists about their role in mitigating and adapting to climate change is imperative to provide adequate care to patients. Purpose: To describe the incorporation of climate change topics within pharmacy training at three academic institutions using different approaches to student learning and engagement: didactic teaching, interprofessional

	collaborative online international learning (COIL), and co-curricular learning opportunities. Methods: Faculty at the University of California San Francisco School of Pharmacy (UCSF) and University of Montana Skaggs Skaggs of Pharmacy (UM) incorporated climate-related content throughout the didactic curriculum emphasizing knowledge acquisition and integration. Topics at UCSF spanned respiratory diseases, mental health, and infectious diseases. UM's interprofessional COIL course covered global perspectives on planetary health topics designed to encourage student-led inquiry, peer-to-peer learning, and application of knowledge in an exchange between students in Montana, Colorado, and Australia. A student advocate at Virginia Commonwealth University (VCU) School of Pharmacy developed a co-curricular group focused on education and advocacy in environmental sustainability. Preliminary outcomes between 2023-2024 across these educational offerings are reported here. Results: UCSF students highly rated the climate-health content (mean teaching evaluation ratings ranged from 4.16-4.68, where 5=ideal) and demonstrated adequate performance (82% pass rate) on a summative exam question requiring knowledge application of climate change impacts on mental and social determinants of health. Students participating in UM's COIL course reported increased interest in promoting environmental sustainability (n=34/40, 85%), increased interest in mitigating the impacts of climate change on human health (n=34/40, 85%), and increased confidence in engaging in self-directed learning to increase their knowledge about planetary health (n=32/40, 80%). Students at VCU were able to create an independent organization to address the gap between professional pharmacy training and environmental responsibility. Leadership opportunities along with communication and collaboration skills through the organization gave way to a professionally diverse group of pharmacy school graduates. Significance: These preliminary results indicate the feasibility and acceptability of incorporating climate-health content within pharmacy training. Students across all three institutions expressed interest in these topics, demonstrating an opportunity to engage students and expand their role within the pharmacy profession by addressing climate-health issues. Future directions include advocating for wider adoption of climate change content within pharmacy education and training.
	Michael L. Lim, William C. Gong USC Mann School of Pharmacy and Pharmaceutical Sciences
	Driving Innovation and Future-Proofing Pharmacy Careers Through Pharmaceutical Industry Training and Educational Programs The pharmaceutical and biotechnology industry values highly trained pharmacists with skills to deliver value for research, development, and commercialization of novel medicines with patient impact. While opportunities exist for students looking beyond direct patient care and drug distribution, the industry is dynamic due to rapid innovations in science, technology, and medicine, plus volatility in the competitive business environment, company strategies, and government and payor pressures. A future-focused strategy for innovative pharmacy education and training that emphasizes industry careers and prepares pharmacists for an evolving and uncertain future requires understanding of and investment into core competencies that will assure success and adaptability. Objectives: Identify national and local trends in pharmacy education, pharmaceutical, and biotechnology job market, and future

	scientific/technology/medicine disruptors. Innovative models and recommendations for pharmacy educators will be proposed. Methods: Analysis of local institutional Fellowship database versus available national data, combined with survey and focus group feedback from Fellowship Alumni, qualitative input from pharmaceutical industry leaders and stakeholders, and literature review. Results: Our institution's industry Fellowship program has grown ~250% in the past 5-10 years with >300 alumni. Recent national data from the Industry Pharmacists Association indicate a decline in industry fellowships in 2024 [n=925 vs 941, -2% and n=465 vs 539 1st-year fellows, -14%], which is consistent with local institutional data [n=35 vs 40, -13%]. Anecdotal reports indicate an increasingly competitive job market and difficulty for Fellows to find industry positions following training completion; root causes are multifactorial and require tailored solutions for individuals and program design which will be presented. Descriptive assessment of recent Fellowship focus areas, core capabilities, fellowship duration, and relevance to emerging and innovative areas of science/technology/medicine will be presented with recommendations for potential new areas of investment to align with the Future of Pharmacy. Representative case studies of pharmacists will be presented to illustrate different training pathways for industry careers (Early vs Late career transition to industry, Fellowship vs Residency vs Direct-to-Industry) with pros/cons and implications for development of clinical and foundational skills for industry success, future adaptability, and long-term growth and job satisfaction. Implications: A future model for training pharmacists for emerging careers in industry will require integrative clinical and industry experiences and one size will not fit all. Considering the rapid changes in industry and technology, educators and companies must be able to nimbly recognize and commit to growth areas with strategic value to ensure pharmacists are well-placed for future careers.
	Igor Mitrovic, MD Professor of Physiology and Clinical Pharmacy, Vice Dean, PharmD Education Tiffany Pon, PharmD, Professor of Clinical Pharmacy, Director of Experiential Education, Greater Sacramento Area Program University of California San Francisco, School of Pharmacy
	Addressing Access to Health Care in Underserved Communities: Hybrid BA/BS-to-PharmD Program California's San Joaquin Valley (SJV) and Central Valley rural communities face significant healthcare challenges, including critical shortages of providers and long distances to care facilities. These healthcare disparities are compounded by a lack of culturally representative providers and a shortage of pharmacies and pharmacists. Objectives/Purpose: To address the healthcare disparities and workforce shortages in a rural underserved region of California, the University of California, San Francisco (UCSF) School of Pharmacy and the University of California, Merced (UC Merced), which is located in the Central Valley, are establishing a BA/BS-to-PharmD Pathway Program. This pioneering initiative is streamlining the educational journey for students, facilitating their entry into the pharmacy profession, and ultimately meeting unmet healthcare needs in the Central and San Joaquin Valley. Methods: The program was developed by a working group consisting of faculty from both UCSF and UC Merced. The working group developed admissions and program criteria to enable students to complete a Bachelor of Arts (BA) or Bachelor of Science (BS) degree at UC Merced and a Doctor of Pharmacy (PharmD) degree at UCSF in six years. Selected courses offered by the UCSF

	School of Pharmacy will satisfy Bachelor's degree requirements. Thus, students in the program will complete their BA/BS requirements concurrently. To encourage students to return to the rural regions of California, students in the program will be required to complete their Advanced Pharmacy Practice Experiences (APPEs) in the San Joaquin and Central Valley. Results/Outcomes: The first cohort will be selected among the applicants completing their first year of undergraduate studies at UC Merced in the Spring of 2026; the first graduates from the program will complete their studies at the UCSF School of Pharmacy in 2031. This hybrid model reduces the time and financial burden of obtaining these degrees separately, supports workforce development, and trains competent healthcare providers for the underserved regions of California. The program's success will be assessed by the number of graduates and the number who return to practice pharmacy in rural California. Significance/Implications/Relevance: This initiative leverages the diverse backgrounds and regions served by UC Merced to foster culturally competent care in underserved rural regions. The hybrid BA/BS-to-PharmD Program is a model for partnerships between undergraduate institutions and pharmacy schools in educating a strong and competent pharmacy workforce for rural regions while shortening the time to graduate health professional degrees.
	Mark A. Munger, PharmD. Jacque Turgeon, B.Pharm., Ph.D. Przemyslaw Radwanski, Pharm.D., Ph.D. University of Utah Health/College of Pharmacy/Department of Pharmacotherapy and Internal Medicine Galenus Rx Orlando, FL The Ohio State University/College of Pharmacy/Division of Pharmaceutics and Pharmacology
	How long should we wait to get involved and implement Drug Safety Programs? Significant financial losses and, more critically, substantial risks to patient safety arise from the inappropriate prescribing and dispensing of medications. New approaches focused on drug safety and direct clinical pharmacists' interventions, that differ significantly from standard Medication Therapy Management (MTM) and Drug Utilization Reviews (DUR), can identify medication-related problems and result in patient protection, healthcare cost reductions, and enhanced program integrity. Inappropriate drug safety contributes to increases in emergency room visits, hospital admissions, and inflated spending. Dangerous drug combinations can be identified and mitigated by applying advanced analytics through case review and medication reconciliation by clinical pharmacists and interventions directed at prescribers, dispensing pharmacists, and patients; provider and pharmacist education; policies and prior authorization for high-risk drug combinations or quantity limits on certain controlled substances; and patient engagement and support. Methods: Pharmacy claims data, a rich source of information on prescription utilization, provides a powerful foundation for detecting, preventing, and addressing dangerous drug combinations. By implementing an advanced analytics framework, patterns indicative of ineffective and unsafe prescribing behaviors (including medication misuse and abuse), can be identified. The prescribing behaviors can then be analyzed by the advanced analytic framework by highly trained pharmacists. Patient medication reconciliation additionally provides a mechanism to capture prescribing behavior and OTC and nutraceutical use. Outcomes: The outcome of prescribing behaviors-medication reconciliation/analytic review framework is identification of dangerous drug combinations including: 1) Drug-drug interactions; 2) Simultaneous, multi-drug interactions in patients with polypharmacy; 3) Therapeutic duplication; 4)

	Polypharmacy in high-risk populations; 5) Fraudulent prescribing i.e., providers or patients engaging in fraudulent activities, such as obtaining prescriptions for controlled substances from multiple providers ("doctor shopping"). Implications: Implementing a drug safety program has several demonstrated benefits: 1) Enhanced patient safety by proactively addressing unsafe and ineffective drug combinations to reduce adverse drug events and mortality; 2) Cost savings by avoiding hospitalizations and emergency room visits; 3) Health program integrity by strengthening oversight deters fraudulent and inappropriate prescribing behaviors; and 4) Regulatory compliance to align with state and federal requirements for health care program (Medicare/Medicaid) management. Relevance: In conclusion, identifying and addressing ineffective and dangerous drug combinations through a scientific review of pharmacy claims data combined with clinical pharmacists' intervention with state-of-the art advanced clinical decision support systems should be implemented throughout education and training across the pharmacy profession and is the way to look at the future for pharmacy: The future is now!
	Jennifer Ortega, PharmD Joe Anderson, PharmD Donald Godwin, PhD University of New Mexico College of Pharmacy
	Preparing the Future Pharmacist Workforce: The UNM Pharmacist Clinician Training Program The future of pharmacy practice lies in expanding pharmacists' roles to meet evolving healthcare demands. In New Mexico (NM), pharmacists with additional clinical training are licensed as Pharmacist Clinicians (PhC) and have broad prescriptive authority commensurate with their clinical training, skills, and experience. Additionally, NM has enacted a reimbursement parity law which compensates PhCs for their clinical services at the same rate as other healthcare providers. Thus, PhCs are highly trained and well-positioned to address primary care shortages particularly in rural and underserved areas. Despite this legislative support and interest from the pharmacist community, there remains a significant gap in structured clinical training programs, including experiential training sites, to develop this specialized workforce. Objectives/Purpose: The University of New Mexico (UNM) College of Pharmacy has developed a Pharmacist Clinician Training Program to prepare pharmacists for licensure with prescriptive authority. This initiative aims to: • Equip pharmacists with advanced patient care skills •Increase the number of practicing PhCs •Expand the pharmacist workforce to improve healthcare access •Serve as a scalable and financially viable model for PhC-led primary and chronic disease management. Methods: Create a six-month training program requiring a pharmacist commitment of 8-10 hours/week, allowing working pharmacists to expand clinical career options. The program combines asynchronous didactic instruction, hands-on patient care, live case discussion and interprofessional collaboration. Program components include: •A minimum of 150 patient contact hours under the supervision of prescribers •Real-time case discussions utilizing the Project ECHO platform to enhance clinical decision-making •Clinical refresher courses delivered through both asynchronous & synchronous learning •Interprofessional layered learning to strengthen team-based care Results/Outcomes: Expected outcomes: •An increased number of licensed PhCs prepared to address provider shortages particularly in rural and underserved areas •Creation of a scalable and financially viable model for PhC-led primary and chronic disease management •Provide practicing pharmacists with a

	unique training model that allows for development of a new clinical practice career path •A replicable training model that can be adapted in other states Significance/Implications/Relevance: This program characterizes the future of pharmacy by developing an expanded, highly-skilled workforce capable of providing direct patient care. By bridging gaps in healthcare access, PhCs contribute to improved health outcomes for the communities they serve. This training program demonstrates an innovative approach to pharmacy education and workforce development in response to gaps in healthcare and community needs. "
	Chelsea Di Polito, PharmD, BCPP American Association of Psychiatric Pharmacists (AAPP)
	Psychotropic Stewardship: The Future of Pharmacy in Mental Health Board-Certified Psychiatric Pharmacists (BCPPs) play a critical role in optimizing psychotropic medication use through Psychotropic Stewardship Programs (PSPs). These programs provide a structured approach to medication review, optimization, and ongoing management to enhance patient outcomes, minimize adverse effects, and improve psychiatric care. Objectives/Purpose: To highlight the role of BCPPs in advancing patient care through PSPs, ensuring the safe and effective use of psychotropic medications for individuals with psychiatric and substance use disorders. Methods: PSPs integrate BCPPs as leaders within multidisciplinary teams, including psychiatric prescribers, nurses, and social workers, to optimize psychotropic medication management. Key components include comprehensive medication reviews, collaborative treatment planning, and ongoing monitoring. PSPs employ prospective audits, retrospective chart reviews, and clinical decision-support tools such as medication therapy management and best practice alerts. Additionally, risk stratification methods help prioritize high-risk patients, allowing for targeted interventions that optimize resource allocation and staff efficiency. Program effectiveness is evaluated through medication safety, adherence, quality of care improvements, and provider engagement. Results/Outcomes: PSPs have the potential to transform psychiatric care by optimizing prescribing practices, reducing polypharmacy, and improving patient safety. By leveraging BCPPs in leadership roles, these programs enhance evidence-based prescribing, streamline medication reconciliation, and increase adherence. The incorporation of risk stratification and best practices facilitates efficient deployment of clinical resources, ensuring that staff efforts are focused on patients who would benefit most from intensive medication management. Expected outcomes include fewer adverse drug reactions, reduced hospital readmissions, and lower healthcare costs, while expanding access to psychiatric care. Significance/Implications/Relevance: PSPs address both individual and population health needs by improving treatment access, minimizing medication-related risks, and enhancing care coordination. By integrating risk stratification and best practice approaches, these programs improve resource utilization and staff efficiency, ultimately strengthening psychiatric care delivery. As PSPs gain recognition, they could become a standard of care, driving systemic improvements in psychotropic medication use and mental health outcomes.
	Dhakrit Rungkitwattanakul PharmD BCPS FNKF Sanaa Belrhiti PharmD BCPS BCCCP

	Department of Clinical and Administrative Sciences, Howard University College of Pharmacy Department of Pharmacy, Howard University Hospital
	Using Implementation Science to Advance Nephrotoxin Stewardship Service and Health Equity in Preventing Hospital-Acquired Acute Kidney Injury among African American patients African American patients face a disproportionately higher risk of hospital-acquired acute kidney injury (HA-AKI), largely due to a greater burden of pre-hospitalization risk factors such as hypertension, heart failure, diabetes, and chronic kidney disease. Nephrotoxin exposure during hospitalization further exacerbates this risk. Despite numerous evidence-based strategies to reduce HA-AKI, structured nephrotoxin stewardship programs remain underutilized in hospitals serving predominantly Black populations. To address this disparity, we applied an implementation science framework to develop and operationalize a nephrotoxin stewardship service (NSS) aimed at mitigating HA-AKI risk among African American patients. Methods: We applied an implementation science framework, guided by the Consolidated Framework for Implementation Research (CFIR), to design, implement, and evaluate the NSS at a community-based teaching hospital where 75–80% of patients are African American. Key components included stakeholder engagement, needs assessment, and iterative process improvements informed by real-time data. The NSS integrated pharmacist-led medication monitoring, electronic health record (EHR)-based nephrotoxin surveillance, and provider education on nephrotoxin burden reduction strategies. Results: The implementation process led to the successful establishment of an operational nephrotoxin stewardship service within the hospital. Early outcomes indicate improved identification of high-risk patients, real-time pharmacist interventions to adjust nephrotoxin exposure, and enhanced provider awareness of HA-AKI prevention strategies. Integration within existing hospital workflows facilitated uptake, and initial feedback from clinicians supported the service's value in improving patient safety. Conclusion: The creation of a nephrotoxin stewardship service using an implementation science approach represents a critical step toward reducing HA-AKI disparities in African American patients. By embedding evidence-based nephrotoxin risk mitigation strategies into hospital practice, this service has the potential to improve kidney health outcomes and promote health equity. Future research will focus on evaluating the long-term impact and scalability of this model to other healthcare settings.
	Farzana Samad Agency for Healthcare Research and Quality
	Importance of Medication Safety Expertise in Research Medication safety specialists help design safe systems across the medication-use continuum, preventing medication-related harm and fostering a culture of safety. Medication safety specialists are often involved in process and quality improvement projects at practice sites. However, projects localized to an organization or lacking evidence-based design may not be easily accessible for other organizations seeking to build upon existing solutions. The Agency for Healthcare Research and Quality (AHRQ) is uniquely poised to lead the nation in patient safety research. As of August 2024, AHRQ has supported 123 patient safety projects related to medication safety, however the involvement of medication safety specialists on research teams are obscure. To prepare the next generation of pharmacists entering the field of medication safety, research skills and experience are crucial to contributing to key personnel roles on

	research teams. Because the safe use of medications is important to AHRQ's mission, we sought to understand the grant funding provided to schools of pharmacy for research training. Objectives/Purpose: To quantify the extent of AHRQ grant funding to schools of pharmacy and to promote the field of medication safety research to potential pharmacy students, residents, fellows, and career pharmacy professionals. Methods: NIH RePORTER Tool was used to extract all projects administered and funded by AHRQ grants between 1985 and March 2025. Training-related mechanisms were targeted for review. Results/Outcomes: A total of 14,300 projects were administered and funded by AHRQ grants between 1985 and March 2025. Through a broad application of "training-related" mechanisms, activities K01, K02, K08, K12, F31, F32, R36, and T32 were included (n=2928, 20% of grant funding). The most awarded training mechanism was K08, which accounted for 6.97% of all grant funding. Out of all "training-related" grants, most were awarded to schools of medicine (49.97%) and 1.81% were awarded to schools of pharmacy. Notably, no grants were awarded to schools of pharmacy since 2020. Significance/Implications/Relevance: Schools of pharmacy receive relatively less grant funding. This data can be used to supplement discussion of barriers to interest, formal education, training, and grant funding for schools of pharmacy, specifically in the fields of patient safety and quality. This data can be used to encourage medication safety specialists to seek research training to be a part of interprofessional teams studying evidence-based best practices.
	Olivia Sin , Anthony Blash, Pharm.D., CPHiMS Belmont University College of Pharmacy & Health Sciences
	Connecting the Dots: Sleep Duration and Hypertension Prevalence Insufficient sleep has been identified as a contributor to various chronic health conditions, such as hypertension. As accessible healthcare providers, pharmacists are well-positioned to play a greater role in addressing modifiable risk factors such as a lack of sleep to help patients prevent and manage high blood pressure. Objectives/Purpose: This study aims to evaluate the association between short sleep duration (defined as fewer than 7 hours per night) and the prevalence of hypertension among adults aged 18 and older in the state of Tennessee. The findings will inform potential strategies for pharmacists to support individual and population health. Methods: A Structured Query Language (SQL) query was executed in Azure Data Studio to analyze associated health-related variables within the 2019 Belmont Data Collaborative (BDC) Hypertension Data Product, such as short sleep duration and the prevalence of hypertension. This dataset integrates data from multiple publicly accessible data sources and surveys across Tennessee census tracts. A line graph was used to visualize the association in Azure Data Studio, and the dataset was further imported into Microsoft Excel for scatter plot analysis. Results/Outcomes: Census tracts with higher percentages of adults reporting less than 7 hours of sleep per night tended to show higher rates of hypertension. The scatter plot revealed a positive association with a trendline R-squared value of 0.3167, suggesting that shorter sleep duration may contribute to an increased prevalence of high blood pressure. Significance/Implications/Relevance: These findings highlight a valuable opportunity for pharmacists to promote sufficient sleep in the prevention and management of high blood pressure. By educating and counseling patients on the importance of adequate sleep, pharmacists can help address a commonly

	overlooked risk factor for hypertension. This non-pharmacological approach supports a more holistic model of health and reinforces the evolving role of pharmacists in preventive care.
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	Pharmacists at the forefront of precision medicine: Implementing preemptive pharmacogenomic (PGx) testing to reduce serious treatment-related adverse events (TRAEs) in patients with gastrointestinal (GI) cancers Fluoropyrimidines (FP) and irinotecan, standard treatments for GI cancers, are impacted by PGx variants in DPYD and UGT1A1, respectively. Variant carriers experience a higher incidence of severe TRAEs; however, pretreatment testing is not widely performed in clinical care. The FDA has updated the drug labels for FPs (both 5-FU and capecitabine) to highlight the increased risk and for clinicians to consider DPYD testing prior to treatment. Objectives: To implement a pharmacist led precision medicine initiative for performing pretreatment DPYD/UGT1A1 testing in our health system. Methods: During the pre-implementation phase, we established a PGx assay with rapid turnaround time, integrated discrete PGx results in the electronic health record (EHR), and delivered provider education. We conducted a pragmatic study at three oncology clinics (NCT04736472), where patients initiating treatment with a FP or irinotecan were consented to testing and received preemptive genotype-guided chemotherapy dose modifications. The primary endpoint was feasibility defined as the proportion of results available prior to cycle 1. Secondary endpoints were fidelity (genotype concordant dose modifications) and severe TRAE (requiring emergency room visit or hospitalization) over the first 6 cycles. Results: From 3/2021- 12/2022, 288 patients received testing (54% male, 16% Black, mean age 62 ±12 years, 46% colorectal, 32% pancreatic cancer). The median lab turnaround time was 10 (IQR 9-13) calendar days with 57% of results available prior to cycle 1. We identified 11 (4%) DPYD intermediate metabolizers (IM) and 34 (15%) UGT1A1 poor metabolizers (PM). Chemotherapies were preemptively dose reduced for 7 of 8 DPYD carriers receiving FP and 5 of 8 UGT1A1 PMs receiving irinotecan. The were fewer severe TRAEs in the prospective testing group compared with a historical control group (38% vs. 65%, p=0.12). Significance: Pharmacists can play a key role in implementing precision medicine services to optimize chemotherapy and improve patient safety. PGx-guided dosing for DPYD and UGT1A1 variant carriers led to decreased severe TRAEs compared with a historical control population. DPYD/UGT1A1 testing is an important precision oncology approach to optimize patient safety.

Session II Absentee	Daniella Underwood, PharmD Candidate, Grace Beyer, PharmD Candidate, Harry Woodard, PharmD Candidate, Calandria Riley, PharmD Candidate, Jerry Callahan, RPh, Catherine Gilmore, PharmD, BCACP St. Louis College of Pharmacy at the University of Health Sciences and Pharmacy in St. Louis
	Defining our role with clinical services: A summer internship to explore student engagement in Missouri community pharmacies and clinical services Community pharmacies play a crucial role in providing medication management, patient education, and clinical services. However, integrating and expanding clinical services within these settings remains a challenge. Pharmacy students represent a valuable resource to enhance these services while gaining practical experience. This initiative seeks to bridge the gap between academic training and real-world pharmacy practice through a structured internship program. Objectives/Purpose The primary objective of this internship program is to empower pharmacy students by equipping them with hands-on experience in clinical services while simultaneously providing community pharmacies with new revenue-generating opportunities. By facilitating student engagement in activities such as medication therapy management (MTM), vaccinations, and patient screenings, the program aims to strengthen the role of pharmacists in healthcare delivery and ensure their continued relevance in the evolving healthcare landscape. Methods The program offers paid internships to rising second- and third-year professional pharmacy students. Interns receive specialized training in clinical services, billing systems (OutcomesMTM®, DCPro, and Missouri Medicaid medical billing), and workflow integration before being matched with participating pharmacies. Community pharmacies expressing interest receive guidance on Medicaid provider enrollment and other revenue-generating services. The students are employed through St. Louis College of Pharmacy (STLCOP) to streamline personnel management. Results/Outcomes A pilot internship was conducted in a Missouri pharmacy from June 19 to August 15, 2024. During this period, one student exclusively provided clinical services, including MTMs for Missouri Medicaid and patient outreach under the Vaccine Gap Program. Preliminary data indicate that the student's clinical work generated a net return of $90.20 per hour for the pharmacy, demonstrating the program's potential financial viability. Significance/Implications/Relevance This internship program has the potential to reshape pharmacy practice by increasing student exposure to clinical services, improving patient care outcomes, and creating sustainable revenue models for community pharmacies. By integrating trained students into the workforce, pharmacies can expand their services efficiently, while students gain confidence and competency in delivering direct patient care. The initiative strengthens the connection between pharmacy education and professional practice, positioning pharmacists as essential healthcare providers in community settings. eople who seek buprenorphine for opioid use disorder(OUD) are unable to access it due to geographic, societal, financial, and policy barriers. Long-acting injectable buprenorphine (LAIB) formulations are administered in a limited number of emergency departments, carceral, and outpatient care settings. Community pharmacies are low-barrier locations for starting and maintaining people on buprenorphine. Collaborative addiction care models have shown that pharmacists, providers, and patients benefit from convenient locations,

	Sharon Youmans, PharmD, MPH Executive Vice Dean, Program Director Kathy Giacomini, PhD, BSPharm University of California San Francisco School of Pharmacy
	A Door to the Future: A Pharm Tech to PharmD Pathway Program Pharmacists play pivotal roles as medication specialists in managing chronic diseases and helping to reduce and eliminate health disparities. The University of California San Francisco (UCSF) School of Pharmacy is committed to producing pharmacists for the state of California and the nation. The central valley in California has large pharmacy deserts and underserved communities in need of pharmacists. There are many pharmacy technicians in these communities, and they represent an excellent group of potential candidates for pharmacy school. Purpose: The purpose of this program is to prepare technicians and particularly those from the Central Valley to be competitive applicants for pharmacy school and to successfully complete a Doctor of Pharmacy degree. Many of these technicians are from underserved and low-income backgrounds. Methods: Candidates will be recruited from underserved regions in California, namely the Central Valley of California; however, the program is open to all who apply. The main eligibility criteria for acceptance into the program is to be a current technician or have worked as a technician in the last five years. There are no academic or financial requirements to participate in the program. Upon acceptance into the program participants will be assessed by our Office of Admissions staff to create an individualized plan that they can follow to fulfill required pre-requisite courses. The one-year hybrid (virtual and in person) program will consist of a series of workshops featuring topics on the pharmacy profession, career options, preparing personal statements, tips on interviewing, professional development, and a tour of the UCSF campus. Pharmacists and current pharmacy students will serve as mentors and advisors. After completion of the program, the participants will be followed for three years or until they are accepted into a school of pharmacy. Once in pharmacy school, participants will receive individual mentoring to help them succeed in pharmacy school, and those from the Central Valley will have pharmacy practice experiences (APPEs) in the Central Valley. The program is advertised by word of mouth, our school website, and social media platforms. Results: The application window was opened in February. To date we have 9 applications for a cohort of 15. Significance: This program takes an innovative and proactive approach to reach individuals who are interested in becoming a pharmacist and applying to pharmacy school but were not able to find a path forward. This program is an investment in the future to strengthen and increase the pharmacy workforce.

NATIONAL ACADEMIES Sciences Engineering Medicine

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- Reporting the incident to an employee involved in the activity in which the member or volunteer is participating, who will then file a complaint with the Office of Human Resources.

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