AACP REPORT

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Administrative Services

All Men are Created Equal - Where does that Leave Women in the Academic World?

Katelyn M. Sanders, Shenandoah University, Timothy Bloom, Shenandoah University, Briana Fonseca-Carvalhais, Shenandoah University, Jessica Samoy, Shenandoah University. Objective: There is an increasing awareness that faculty perceptions of acceptance in the workplace affect work satisfaction. It is particularly important to understand women’s perceptions, in order to identify possible gaps in gender equality. This research compares male and female faculty at Shenandoah University’s Schools of Health Professions, Nursing, and Pharmacy based on their perception of “being heard” by colleagues and administrators. Methods: All faculty in three healthcare professions schools were emailed a request to participate and a link to an online survey. Two reminders were sent, and the total survey response period was 4 weeks. Survey questions used a Likert-type scale, and those of a similar theme, such as “feeling pressure to agree with colleagues” and “feeling all are held to the same standard”, were combined for a sum value. Responses were sorted by self-identified gender and sum values were analyzed using T-tests. Results: A total of 49 respondents participated, 39 self-identifying as female and 10 as male, for a response rate of 39%. Although males had higher average scores on some themes, T-tests showed no statistically significant differences in the perceptions of male and female faculty regarding the workplace environment at the three SU schools. Conclusions: SU has created an environment in which male and female healthcare professions faculty report equal feelings of being heard by colleagues and administrators. Results will be shared with the administration of the three schools. Future studies will broaden inclusion criteria to SU Schools outside of the health professions.

Assessing the Association of Hispanic Ethnicity and Other Personal Characteristics with Pharmacy School Admissions

Bernadette R. Cornelison, The University of Arizona, Christopher Edwards, The University of Arizona, David R. Axon, The University of Arizona, Lillian Gorman, University of Arizona, Lorin Rudin-Rush, University of Arizona, Bruce Johnson, University of Arizona College of Pharmacy. Objective: It is currently unclear why the student cohort at the University of Arizona College of Pharmacy (UACOP) does not reflect the diversity of Southern Arizona. This study evaluates whether ethnicity was associated with pharmacy school admission status, and secondarily, to identify additional factors associated with pharmacy school admissions. Methods: This retrospective database study used UACOP admissions data from 2005 to 2018. Applicants with complete data were included. The outcome variable was admitted versus not admitted. A multivariable logistic regression model was used to identify variables significantly associated with admission status using an a priori alpha level of 0.05. Results: There were 2096 applicants included in the analysis (mean age 25.1±5.2 years, 59.9% female, 13.0% Hispanic). Hispanic ethnicity (Hispanic versus non-Hispanic) was not associated with admission status (adjusted odds ratio [AOR]=1.202, 95% confidence interval [CI]=0.841-1.719). Characteristics significantly associated with admission to pharmacy school were: age < 25 versus ≥ 25 years (AOR=2.273, 95% CI=1.783-2.907); female versus male gender (AOR=1.536, 95% CI=1.224-1.927); attended high school within versus outside Arizona (AOR=1.743, 95% CI=1.289-2.359); no previous application versus previous application (AOR=1.481, 95% CI=1.148-1.916); Pharmacy College Admission Test (PCAT) biology score ≥ 70% versus < 70% (AOR=1.696, 95% CI=1.321-2.177); and PCAT chemistry score ≥ 70% versus < 70% (AOR=1.618, 95% CI=1.258-2.080). Conclusions: This study found ethnicity was not associated with pharmacy school admissions and identified other characteristics associated with admission status. Although reassuring that bias was not seen in the admissions process, this study highlights the need for intervention prior to the pharmacy school application process to ensure future cohorts reflect the diversity of the region. Further research using data from multiple schools is needed to improve the external validity of these findings.

Benchmark Report on Utilization of Faculty Workload Models in Colleges and Schools of Pharmacy

Lisa Lebovitz, University of Maryland, Michael J. Fulford, The University of Georgia, Andrew Darley, The University of Georgia. Objective: Faculty members are facing competing priorities, unclear expectations, perceived inequity in assignments, and the growing administrative burden.
that comes with using technology in instruction. Workload must be equitably assigned and valued so that minority and women faculty are not disproportionately impacted. The objective of this study was to characterize and compare institution-specific models for measuring and utilizing faculty workload data. Methods: The University of Maryland School of Pharmacy sponsored an investigation into peer schools’ development and implementation of faculty workload models. The external group conducting this project selected twenty-eight colleges and schools of pharmacy based on characteristics similar to the University of Maryland School of Pharmacy, such as PharmD class size, research dollars, and U.S. News and World Report pharmacy school rankings. Exploratory emails were sent to college/school leadership, followed by phone interviews. Additional follow-up conversations occurred with a subset of nine institutions. Results: Several categories are associated with well-developed faculty workload models, including extrinsic and intrinsic motivators, college/school culture and norms, faculty perceptions of equity and trust in leadership, having confidence in the model and a consistent understanding of the data. Typical components of faculty workload models include instructional workload, external funding, clinical requirements, external consulting, non-instructional productivity, citizenship, administration, and other considerations. There is wide variability in how faculty workload models are implemented and applied, even at comparable institutions. Conclusions: Schools with well-developed faculty workload models are developing equity-minded components of transparency, clarity, credit, norms, context, and accountability in their policies and practices as suggested by the American Council on Education. These evidence-based models could inform an academy-wide effort to improve faculty workload policies.

COVID-19’s Impact on the Mental Health of Pharmacy Students

Jacky Novatt, Long Island University, Jennifer Minkov, Long Island University, Susan Mirzakandov, Long Island University, Noor Njeim, Long Island University, Suzanna Gim, Long Island University. Objective: To describe how the COVID-19 pandemic impacted the mental health of pharmacy students, as both students and frontline healthcare workers. Methods: Long Island University (LIU) pharmacy students from the classes of 2021-2025 were surveyed between Oct. 2021-Feb. 2022. Participants were asked to retrospectively evaluate their emotional state during February 2020 (before COVID), April 2020 (at the height of COVID in NYC) and at the time of participation, using three validated standardized scales: Generalized Anxiety Disorder-7 (GAD-7), Patient Health Questionnaire-9 (PHQ-9), and Perceived Stress Scale (PSS). Participants provided demographic information, ranked the impact of various sources of stress, and reported useful coping mechanisms. Results: 170 students responded to the survey (16% response rate). The GAD-7, PHQ-9, and PSS scales showed that anxiety, stress, and depression all worsened between February and April 2020 and then stayed consistent through February 2022. Moderate anxiety went from 12.61% to 27.73% to 24.37%. Severe stress went from 3.77% to 19.81% to 18.87%, and moderate depression went from 8.4% to 20.17% to 24.37% (n = 119). For most students, academics was found to be the primary cause of stress (59.2%) as opposed to financial difficulties (16.5%), health (16.5%), or work (5.83%). Social media (94.17%) and listening to music (98.06%) were the most utilized coping mechanisms. Conclusions: Survey responses showed a pattern of worsening mental health of pharmacy students, coinciding with the start of the pandemic. Identifying primary sources of stress and useful coping mechanisms can aid LIU and other colleges of pharmacy in supporting students through this ongoing pandemic.

Effect of Faculty Department on Evaluations of Student Self-awareness in a Doctor of Pharmacy Program

Emma M. Gautreaux, University of Louisiana at Monroe, Michael Cockerham, The University of Louisiana at Monroe, Gina Craft, University of Louisiana at Monroe, Glenn Anderson, The University of Louisiana at Monroe. Objective: To compare student reflection outcomes scored by faculty members from two departments within the College of Pharmacy. Methods: The Personal Growth and Development (PGD) course series is a 3-year, 6-semester series of courses designed to develop and assess the self-awareness of pharmacy students in the domains associated with Standards 3 and 4 of Accreditation Council for Pharmacy Education (ACPE) Standards 2016. All college faculty members are assigned a group of six students (2 per cohort, P1-3) to facilitate small group meetings three times over each semester. Students are required to submit three reflections per semester to be graded by their faculty facilitator using a standardized rubric. The developmental rubric includes five elements with six description-anchored levels of performance. Student performance outcomes were collected from the time period of Fall 2018 through Spring 2021. Comparisons of Basic Pharmaceutical and Toxicological Sciences (BPTS) versus Clinical Sciences (SOCS) faculty in the assessment of student self-awareness in the areas of ACPE Standards 3 and 4 were performed using chi-square, Mann-Whitney
U, and appropriate descriptive statistics. **Results:** 1464 self-reflection documents were analyzed (560 BPTS, 904 SOCS). BPTS tended to score student reflections higher than SOCS (mean total score = 25.7±4.8 vs. 25.0±4.9, p=.004, BPTS vs. SOCS). Comparisons of faculty subdomain scores for reflection clarity (p=.27) and relevance (p=.09) showed no differences. However, SOCS scored reflections lower than BPTS in the subdomains of analysis (p=.002), self-awareness (p<.001), and interconnections (p<.001). **Conclusions:** Differences in student reflection outcomes appear to exist based upon evaluator department. Further investigation into the root of and possible resolution of these differences is merited. Further exploration of how evaluator department influences professional identity formation will be pursued.

**Evaluation of an International Collaborative Certificate Program for Pharmacy Student Leaders of Peer-assisted Learning Programs**

Eman M. El-labbad, pharmaceutical Sciences Department, College of Pharmacy, Gulf Medical University, Sherief Khalifa, Gulf Medical University, Reham Khalid, College of Pharmacy, Gulf Medical University, Farah Sedki, California Northstate University College of Pharmacy, Suzanne Clark, California Northstate University, Eugene Kreys, California Northstate University, Islam N. Mohamed, California Northstate University. **Objective:** Peer-assisted learning (PAL) includes diverse frameworks such as peer tutoring, teaching assistants (TAs), or supplemental instruction (SI). We developed an international certificate training program to introduce essential pedagogical aspects of teaching and learning to PAL student leaders in the Colleges of Pharmacy at Gulf Medical University and California NorthState University. **Methods:** Three synchronous online sessions were delivered for 2.5 hours each covering 9 learning objectives described in 3 themes: an introduction to competency and outcome-based education, the science of learning and memory, and tools to promote learning in PAL programs. 13 faculty and 11 students from both institutions participated in delivering the training program. Pre- and post-session online quizzes were used for assessing the students’ knowledge. A 5-point Likert scale analysis was used for measuring students’ perceptions of the learning outcomes. **Results:** A total of 42 students providing PAL at both institutions attended the program. Paired T-test analysis indicated a positive improvement in students’ knowledge of the learning objectives with significant differences observed after day 1 and day 2 sessions. At least 70% of students indicated that the training program has increased their knowledge level in the addressed domains of mapping their PAL sessions to competency-based learning outcomes, professional identity formation, active learning methods, FERPA regulations, and the application of effective learning and memory tools in their PAL sessions. **Conclusions:** Our Training program led to significant improvement in students’ knowledge (Bloom’s level 1&2). Further study will assess students’ transfer of teaching and learning skills to their tutoring sessions (Bloom’s Level 3; Kirkpatrick’s level 3&4) measured by a final summative assessment of student’s performance delivering mock teaching lessons.

**Faculty Perceptions of Academic Dishonesty Within a Doctor of Pharmacy Program**

Lena M. Maynor, West Virginia University, Ashleigh L. Barrickman, West Virginia University, Ashlee McLellan, West Virginia University, Marina Galvez-Peralta, West Virginia University. **Objective:** Assess faculty perceptions regarding academic dishonesty, appropriate sanctions, and reasons for not reporting suspected incidents. **Methods:** Faculty were given an anonymous online survey with questions regarding perceptions of the reporting process, appropriate sanctions, and reasons for not reporting suspected incidents. **Results:** Twenty-eight of 48 faculty (58%) completed the survey. On a scale of 1-5 (1=Strongly Disagree; 5=Strongly Agree), faculty rated agreement with several statements: need to report all suspected incidents (4.46±.68), understand reporting process (3.54±1.18), know program-level consequences (3.54±1.12), understand evidence level needed (3.25±1.09), and know available course-level sanctions (3.61±1.21). Compared to faculty with other terminal degrees, Doctor of Pharmacy (PharmD) faculty more strongly agreed all suspected incidents should be reported, (4.67±.13 vs 3.85±.26, p=.0069). The most commonly identified appropriate course-level sanctions were assignment grade reduction or assignment failure for a first offense (both 32.14%) and course failure for a repeated offense (60.71%). The most commonly indicated appropriate program-level sanction was probation for a first offense (57.14%) and suspension for a repeated offense (39.29%). Thirteen faculty (48.15%) indicated not reporting a suspected incident in the past, due to too little evidence (100%), belief that student would not be held accountable (14.29%), process too onerous (10.71%), belief that student would be sanctioned too severely (10.71%), and not understanding the process (7.14%). **Conclusions:** Consistency among faculty in understanding and reporting academic dishonesty is essential, especially in health professions where students should be held to higher ethical standards. While faculty agreed on the importance of reporting all incidents, many faculty stated a lack of reporting suspected incidents, indicating a possible
need for intervention. Future studies could assess ways to address this important issue and increase faculty understanding of academic dishonesty processes.

Financial Management Education: An Assessment of Pharmacy Students’ Perception, Attitudes, and Abilities

Georges Adunlin, Samford University. Objective: Pharmacy-related financial management training and education are an integral part of the pharmacy curriculum. This study aims to evaluate pharmacy students’ perceptions toward financial management education, their attitudes on its clinical relevance, and their ability to use such knowledge in introductory and advanced pharmacy practice experiences. Methods: An online survey was sent to third- and fourth-year pharmacy students. The survey assessed three themes: perceptions toward financial management education; attitudes toward the clinical relevance of financial management education; and the student’s ability to use knowledge of financial management in practice. Descriptive statistics were used to summarize the data. Results: Of 233 students eligible to complete the survey, 139 (60%) students completed the survey, which included 77 third-year students and 62 fourth-year students. The respondents were mostly females (n=91, 65.5%), less than 25 years of age (n=79, 56.8%), reported bachelor’s degree as their highest degree achieved prior to matriculating to pharmacy school (n=67,48.2%). Most of the respondents reported having taken a business-related course prior to matriculating to pharmacy school (n=57, 65.5%), and had plans to pursue hospital pharmacy post-graduation (n=42, 48.3%). Overall, the study showed a positive perception and attitude toward financial management education. Pharmacy students had higher perceptions of their abilities to use financial management knowledge in practice. Conclusions: This survey found an overall optimism in financial management education’s role in pharmacy practice and the ability to obtain financial management competencies in professional pharmacy training. With the evolving practice requirement, pharmacy schools should adapt their financial management curricula with relevant skills to prepare students to become effective entrepreneurs, innovators, and practice leaders.

Identifying Possible Actions Related to Climate, Diversity, Equity, and Inclusion at a College of Pharmacy

Nancy A. Alvarez, The University of Arizona, Bernadette R. Cornelison, The University of Arizona, Mavis Obeng-Kusi, The University of Arizona, Marion Slack, The University of Arizona. Objective: To identify possible action items related to overall climate at a College of Pharmacy as it relates to diversity, equity, and inclusion. Methods: A 17-question survey was distributed to 69 faculty, 123 staff, 514 PharmD students and 30 graduate students. The domains of diversity, equity, and inclusion were defined followed by questions asking respondents to rate overall climate, diversity, equity, and inclusion at the College. Descriptive statistics were used to summarize the data. Results: The number of respondents (%) include 42 (31%) faculty; 33 (21%) staff; 54 (37%) PharmD students; and 16 (11%) graduate students. For climate related to witnessing insensitive or disparaging remarks frequently (11 items), one domain was identified by faculty while staff, PharmD students, and graduate students identified all domains at least once. The pattern of responses was similar for personal experience with insensitive remarks. For participation in diversity activities (4 items), awareness without participation was selected by 44-54% of faculty, 35-54% of staff, 35-48% of PharmD students and 36-46% of graduate students. For perceptions of diversity (10 items), fairly or very was selected by 38%-54% of faculty, 31-33% of staff, 35-48% of PharmD students, and 36-43% of graduate students. For equity, attainable for some to not attainable was identified for 15-26% of faculty, 35-76% of staff, 19-39% of PharmD students, and 63-73% of graduate students. Conclusions: While overall, issues identified were limited, issues with equity need further investigation. In addition, the pattern of response for faculty was different than that of other groups which also should be explored further.

If You Build It, They Will Come (or not): Building Professionalism through Excused Absence Process

Laura H. Waite, Philadelphia College of Pharmacy, University of the Sciences, Lisa Charneski, Philadelphia College of Pharmacy, University of the Sciences. Objective: To describe a model for growing professionalism in doctor of pharmacy students through an excused absence process that parallels workplace expectations. We hypothesized that as students progress, absence requests would decline, commensurate with learned student accountability for actively engaging in their coursework in preparation for their careers. Methods: A mandatory attendance policy was implemented in fall 2018 with a formal excused absence request process. Students must seek approval through the dean’s office based on expectations defined in the student handbook. Requests are tracked on an ongoing basis for trends. Descriptive statistics were used to analyze data. Results: From fall 2018 through March 2022, 1,153 requests were received. As expected, requests declined with progression (P1=50.6%; P2=26.1%;
Impact of Recorded, Asynchronous Admissions Interviews on Holistic and Academic Interview Scores

Fady Abdirlrasul, Northeast Ohio Medical University, Kunal Amin, Northeast Ohio Medical University, Lukas Everly, Northeast Ohio Medical University, Madison Ivan, Northeast Ohio Medical University, Mariah Mrhofchak, Northeast Ohio Medical University, Jubilee Winar, Northeast Ohio Medical University, Nikola Radojkovic, Northeast Ohio Medical University. **Objective:** The purpose of this study is to compare the interview scores of candidates who interviewed in the virtual asynchronous platform vs candidates who interviewed in-person on-campus. **Methods:** Admission candidates participated in either an in-person interview or a virtual asynchronous interview. Virtual interviews were conducted asynchronously through audiovisual capture of interview responses. All interview questions were rated on a scale of one to four. The individual interview scores were averaged with applicants receiving an overall academic and an overall holistic interview score. **Results:** 121 interviews were included in the analysis. Of these interviews, 32 (26%) were conducted virtually and 89 (74%) were conducted in-person. Students participating in virtual interviews scored significantly lower than their in-person peers for both academic (U = 782 [2.8 vs. 3.3], p < 0.01) and holistic interviews (U = 1040 [3.0 vs. 3.3], p = 0.02). **Conclusions:** Asynchronous virtual interviews could be a convenient method to offer interviews to candidates who may not be able to interview in person due to travel costs or other contributing barriers. Although this method may be more convenient for the interviewer, it may result in a lower interview score compared to an in-person interview.

Impact of Supplemental Instruction on Academic Performance of Students in a Doctor of Pharmacy Program

Richard C. Beuttler, Chapman University, School of Pharmacy, Jenna Stewart, Chapman University, School of Pharmacy, Reza Taheri, Chapman University. **Objective:** To evaluate the impact of a Supplemental Instruction (SI) program on academic performance of students. **Methods:** The SI program which focuses on the most challenging course in each semester of a Doctor of Pharmacy program was implemented starting Summer of 2020. The SI program is facilitated weekly by SI Leaders, students who previously performed well in the specific course. In these sessions, SI Leaders engage students via active learning strategies while emphasizing study tips. A total of eight courses were included in the study spanning from Summer 2020 to Fall 2021. Students were able to attend sessions live virtually or watched the tape recordings. Both live attendance and watching the recording were included as independent variables. A linear mixed-effects model was used to examine whether SI participation improved outcome grades in the course. Fixed effects in the model were the number of sessions attended, number of recordings watched, and the course. The individual student served as a random effect to control for repeated measures. A Wald F test was used to determine significance on the fixed effects using the method by Kenward and Roger to adjust degrees of freedom, with pairwise marginal means computed for post-hoc analysis. **Results:** Academic performance was positively and significantly predicted by attendance at live SI sessions (p < 0.005). There was a statistically significant difference in grades between different courses (p < 0.05). The number of recordings watched did not predict course grades (p = 0.74). For each live session attended the final course grade increased by an average of 0.40%. **Conclusions:** Attendance in live sessions was correlated with improved academic performance in courses while no effect was seen from viewing sessions retrospectively.

Perceptions and Practices for Evaluating Faculty Workload by Pharmacy Education Administration

Sharon K. Park, Notre Dame of Maryland University, Lisa Lebovitz, University of Maryland, Margarita DiVall, Northeastern University, Kelly C. Lee, University of California, San Diego, Melissa S. Medina, The University of Oklahoma, Elizabeth A. Sheaffer, Samford University, David Weldon, William Carey University. **Objective:** Assess how department chairs/administrators define, measure, and evaluate faculty workload to better understand practices within the Academy. **Methods:** An 18-item
Pharmacy and Physician Assistant Dual Degree: An Analysis of Its Implications on the Profession

Yen H. Dang, University of Maryland Eastern Shore, Gregory Shaeffer, University of Maryland eastern Shore.

Objective: The purpose of this study is to assess student’s attitudes and perceptions of this dual-degree program compared to other avenues of career advancement. Additionally, the feasibility of the PharmD-PA dual degree is described in terms of salary, job responsibilities, public interest, and its ramifications on the profession.

Methods: A cross-sectional study was conducted at a 3-year pharmacy program. Students were asked of their familiarity of PharmD-PA dual degree and its associated benefits and limitations. Student’s perceptions of the PharmD-PA dual degree on their career outlook, quality of life, salary, and its ramifications on the healthcare sector were assessed. Descriptive and chi-square analysis were conducted.

Results: Seventy-two students completed the survey from all three years of pharmacy school, and only 35 students (48.6%) were familiar with the PharmD-PA dual degree program. Students noted the benefits of pursuing the PharmD-PA dual degree to be acquiring prescriptive authority (44.4%), improved clinical knowledge (29.2%), and better career opportunities (18.0%). The main limitations included the additional time in school (40.3%), financial barriers of the program (26.4%), and increased school workload (16.7%). The majority of students believed that the PharmD-PA dual degree had positive effects on their job prospects, salary, career satisfaction, and allowed for overall improvements in patient care.

Conclusions: Pharmacy students had positive perceptions of the PharmD-PA dual degree program. Schools of Pharmacy should look into the development of PharmD-PA dual degree programs as a unique marketing opportunity for admissions and as a non-traditional method of career advancement.

Pharmacy Students’ Perceptions on Pharmacy Relative to Other Healthcare Occupations

Rehab A. Elhiny, Minia University, Omar F. Attarbeen, Marshall University, Eilan Alhersh, Sidra Hospital.

Objective: The purpose was to describe pharmacy students’ views on the relative status of a number of other healthcare occupations compared with pharmacy.

Methods: A total of 226 pharmacy students were invited to participate in a web-based survey. The questionnaire was composed of 15 items that assessed demographic characteristics as well as the public perceptions of the relative status of a number of other healthcare occupations (physician (MD), dentist (DDS), physician assistant (PA), nurse practitioner (NP), occupational therapist (OT), doctor of optometrist (OD), and physical therapist (PT)) to pharmacy. The students were asked to rate each of these 7 professions in relation to pharmacy on a three-point scale of higher (3), the same (2), lower (1). Descriptive analyses as well as bivariate analyses (Pearson correlation and independent test analyses) were conducted.

Results: A total of 118 students (52%) completed the questionnaire. The students believed that the mean (out of 3) was for MD (2.7), DDS (2.4), PA (2.3), OD (2.3) programs have higher statuses compared to pharmacy. Additionally, they believed that programs like NP (2.0), OT (1.8), and PT (1.8) have almost similar status to pharmacy with the most similar one was NP. The responses to these questions were not associated with either age or gender.

Conclusions: There was an almost universal perception that pharmacy is inferior in status to medicine, dentistry, physician assistant, and doctor of optometry. Although, some of these findings are consistent with the literature, others are a little alarming. Thus, there is a dire need for pharmacy advocates to improve the
perception of pharmacy among the public and the students. Additionally, this study could be used as a marketing tool to recruit future students.

**Physics, Math, Chemistry and Biology Prerequisites for PharmD Program as Predictors of NAPLEX Success**

Medha D. Joshi, *Midwestern University*, Jim Uchizono, *University of the Pacific*. **Objective:** The Doctor of Pharmacy (PharmD) program landscape in USA is facing tremendous pressure with declining number of applicants pool nationwide. The inconsistency of required course prerequisites complicates and further contributes to uneven parity in the admissions process. Lately the discussion on revising prerequisites to lower credit hour requirements in the basic sciences courses such as physics, chemistry and biology is being explored. In this study we explored the correlation between math, physics, chemistry and biology prerequisite PharmD credit hours to NAPLEX passing scores. **Methods:** Prerequisite course requirements for Doctor of Pharmacy (PharmD) degree program in USA such as Program Structure, Math, Biology, Chemistry, Physics hours from PharmCAS and AACP summary document were collected from AACP and statistically analyzed. The NAPLEX 2020 first attempts and all attempts scores were collected from NABP website. Non-parametric and parametric correlations were run using SPSS software (Version 28). **Results:** In both parametric (Pearson) and non-parametric (Kendall \( \tau_b \)) analysis {Pearson: correlation(p-value/Kendall \( \tau_b \): correlation(p-value)} are statistically correlated for physics versus math \{P: 0.383<0.001/K: 0.265<0.001\} and physics versus chemistry hours \{P: 0.162/0.047/K: 0.149/0.40\}, but physics versus biology hours were not statistically correlated \{P: 0.128/0.124/K: 0.119/0.087\}. In parametric and non-parametric analysis no statistical correlation was found between NAPLEX scores and the hours for the four subjects: math \{P: 0.006/0.943/K: 0.020/0.770\}, physics \{P: 0.128/0.124/K: 0.119/0.087\}, chemistry \{P: -0.044/0.965/K: -0.010/0.883\}, and biology \{P: -0.143/0.144/K: -0.061/0.353\}. **Conclusions:** Additional studies are needed that correlates individual student GPA with the NAPLEX score to possibly guide future academic preparations in chemistry, biology, physics and math for PharmD programs and NAPLEX success.

**Prospective Student Values When Selecting a College of Pharmacy to Attend**

Fady Abdrlrasul, *Northeast Ohio Medical University*, Lauryn Jenkins, *Northeast Ohio Medical University*, Paige Tulcewicz, *Northeast Ohio Medical University*, Emily Graves, *Northeast Ohio Medical University*, Maher Abbo, *Northeast Ohio Medical University*. **Objective:** The purpose of this study is to evaluate the factors that impact prospective student pharmacists’ decisions when choosing which college of pharmacy to attend, as well as to identify any potential trends on prospective student values from year to year. **Methods:** Incoming students from 2018-2021 at our college of pharmacy were sent a survey asking questions about why they chose to attend our college of pharmacy. The questions were in Likert scale format and asked how important different values were in deciding on a college of pharmacy to attend. **Results:** Out of 333 students who were sent the survey, 270 responded for an 81% response rate. The most important factor identified by our incoming students was job placement. Reputation, curriculum, NAPLEX pass rates also scored highly. Areas that were not as important to incoming students included dual degree opportunities, international opportunities, and research opportunities. Over the last 4 years, culture of the college has gone down in important to prospective students whereas geographic location, admissions policies, and affordability all went up in value. **Conclusions:** While the generations of incoming students continue to change, colleges of pharmacy need to adjust and recognize values that are important to prospective students when selecting a college of pharmacy.

**Remote Work in Pharmacy Academia and Implications for the New-Normal**

William A. Prescott, *University at Buffalo, The State University of New York*, Daniel Kennedy, *Western New England University*, Judith DeLuca, *Wilkes University*. **Objective:** To determine the extent pharmacy faculty engaged in remote-work during the COVID-19 pandemic, and secondarily to characterize faculty and administrator perceptions of remote-work. It was hypothesized that remote work was commonplace, and that productivity/effectiveness were maintained, and work-life balance positively impacted among those who worked remotely. **Methods:** A 28-question online survey was piloted for validity and then sent to 6,548 AACP members in May 2021. Faculty/administrators from schools located outside the US were excluded. Questions centered on the extent of remote-work and perceptions of its impact on productivity, effectiveness, and work-life balance. Focus groups were held to provide additional insight. Data pertaining to the extent of remote-work and perceived productivity, effectiveness, and work-life balance were analyzed statistically, with sub-analyses run by demographics. **Results:** 6,322 AACP members met inclusion, of whom 1,293 responded to the survey (21% response-rate). At least one
faculty and one administrator responded from 139 (99% response-rate) and 126 schools (89% response-rate), respectively. During the pandemic, 94% of faculty worked remotely at least “some-of-the-time”. Most faculty indicated no change or an improvement in productivity (85%) and effectiveness (80%). Faculty who worked remotely at least “some-of-the-time” perceived they were more productive (p<.0001) and effective (p<.005), and perceived better work-life balance (p<.0001), than those who never/rarely worked remotely. Most administrators indicated no change or an increase in their unit’s productivity (81%) and effectiveness (85%). Themes from focus groups were consistent with quantitative findings. Conclusions: Nearly all respondents worked remotely during the pandemic. Considering most faculty and administrators believe productivity and effectiveness were not compromised, and that there appear to be benefits to work-life balance, US schools of pharmacy should consider permitting faculty to work remotely some-of-the-time.

**Restructuring an Early Academic Alert Program to Increase Interventions, Add Supportive Structures, and Improve Compliance**

Jeremy Hughes, Chicago State University, Paul Fina, Chicago State University, Nicole Richardson, Chicago State University, Savan Patel, Chicago State University. Objective: To restructure an academic alert system to allow for earlier identification of at risk students and increase compliance with support mechanisms. Methods: An existing academic intervention system was identified for process improvement in response to poor compliance and delayed identification of students at risk. Project aims were to increase the layers and mechanisms used to identify and monitor struggling students; improve scheduling and follow-up processes; and ensure compliance. Program challenges and barriers were identified through a collaborative action research approach that included faculty, students, and administration stakeholders. A literature search was conducted, and process comparisons were made with other health professions and institutions. Data management platforms, communication strategies, and follow-up strategies were evaluated. Results: Improvements were identified and implemented in a series of pilots across two semesters. Detection phases were added at pre-matriculation (based on incoming GPA and foundational assessment performance), earlier in the semester (after the first examination), and based on previous semester performance. A fillable-form operationalized self-reflection worksheets and SMART goals action plans were added to document identified support strategies. Improved processes for engaging students in support services increased the number of student appointments with the Learning Specialist from 29 in Spring 2020 to 123 in Fall 2020, the semester after the intervention was started. Students reached 100% compliance for referral meetings by Spring 2021. Conclusions: Improvements to an early identification process can increase identification of students in need of academic support and ensure that they are connected with appropriate support mechanisms.

**Supporting Student Parents’ Well-being and Resilience During and After COVID-19 Pandemic**

Margie Padilla, The University of Texas at El Paso, Gabriel Frietze, The University of Texas at El Paso School of Pharmacy; Vicki Howe, The University of Texas at El Paso. Objective: To identify the challenges health-discipline student parents faced during the pandemic, assess interest in parenting topics, and assess interest in support mechanisms. Methods: An online survey (QuestionPro, Dallas, Texas) was distributed in April 2021 through a list serve for pharmacy students and through their instructors for other health-discipline students. Questions assessed the demographics of the student and their dependents, level of current stress and interest in parent/child caregiver support topics in the domain areas of self-care, special needs, nurturing parent/caregiver, and family management. Results: A total of 17 students consented to the study and completed some of the survey. Most students were from pharmacy (n=8) and social work (n=6) with the majority being female (14/17). The majority of students (N=10) had elementary school aged children and experienced virtual schooling for their child(ren) (54.5%). The highest ranked topics were goal setting, nutrition, work-life balance/integration, motivation, staying positive, managing stress/anxiety, behavior challenges, parental mental health, and helping children succeed at school. Student parents would prefer scheduled meetings with formalized topics (28.6%), supportive email messages (21.4%), and supportive text messages (17.9%) and peer mentorship (17.9%). Conclusions: This study provides a glimpse into the topics that health-discipline student parents may be interested in. Because of the multiple stages of childhood, topic interest varied. However, several topics had consistent interest. For a support mechanism, respondents were mostly interested in scheduled meetings with formalized topics. This study is limited by the low response rate and respondents being primarily from the pharmacy and social worker programs. Future study should help clarify how pharmacy schools’ can best support student parents.
The Effect of Socioeconomic Disadvantage for On-Time Graduation in an Accelerated Doctor of Pharmacy Program

Nicole Lounsbury, William Carey University, Antonio C. Perry, Larkin University, Lynne Arric, Larkin University. Objective: To determine if there is a relationship between socioeconomic disadvantage and progression of pharmacy students in an accelerated three-year program. Methods: The on-time graduation rate for three classes of Pharm.D. students were compared based with responses from the economic or environmental disadvantage questions posed by PharmCAS. On-time graduation rates were also analyzed by sex, race/ethnicity, and geographical area using a Pearson Chi-Square. Student academic admissions profiles were also compared by race/ethnicity using an ANOVA. Results: There was no significant difference in on-time graduation for students who answered yes to any of the economic or environmental disadvantage questions, as opposed to those who answered no. There was also no significant difference in on-time graduation by sex or geographical area. For race, there was a significantly lower rate of on-time graduation for students who are black or African American, even though their admissions criteria are comparable to that of students of other races. Conclusions: Students who have an economic or environmental disadvantage graduated on-time at the same rate as those who did not have one. Black or African American students had lower on-time rates than other ethnic groups, but the reason for lower on-time graduation rates for black or African American students is unclear.

Use of Grit and Social Desirability Scales in Doctor of Pharmacy Admissions

Alyssa Wozniak, D’Youville University School of Pharmacy, Amany Hassan, D’Youville College, Talisa M. Marchese, D’Youville College, Christopher Jadoch, D’Youville College, Beverly Taggart, D’Youville University School of Pharmacy, Timothy Hutcherson, D’Youville College. Objective: To evaluate differences in applicants’ grit and social desirability scores between a 4-year in-person PharmD (traditional) and an accelerated online pathway. Methods: Participants completed a self-administered grit scale and social desirability scale (SDS) during their admissions interview. Application data, interview scores, and admissions decisions were collected. Pearson coefficient was used to measure the correlation between grit and SDS scores. Linear regression was used to test the association between grit and pre-admission GPA or pathway selection, while adjusting for baseline characteristics and SDS. Results: Eighty-four participants were included with 60% female, 46.4% Caucasian, 74% with health-related experience, and 67.9% with a Bachelor’s degree. 61.9%, 26.2%, and 11.9% applied to the accelerated online, traditional, and both pathways, respectively; 95.2% were admitted. There were significantly more applicants older than thirty to the accelerated online pathway compared to the traditional or both pathways (22.6% vs. 0%, p=.001). The mean grit, SDS, and combined scores were 48.98 ± 5.99, 26.17 ± 4.76, and 75.14 ± 9.51, respectively. There was a significant moderate correlation between grit and SDS scores (r=0.56, p<.0001). Grit was not associated with pre-admission GPA after adjusting SDS (p=.542). Females had a significantly higher combined score than males (76.6% vs. 71.6%, p=.031). Participants accepted had a lower mean SDS compared to those denied (25.9 vs. 30.3, p=.05). There were no significant differences in grit, SDS, or combined score based on path. Conclusions: Grit scores may be influenced by social desirability bias, higher among denied applicants, but were not associated with pre-admission GPA or pathway choice and should be applied cautiously in admissions decisions. Future studies should investigate the effect of these scores on progression.

Using ActionPlans® to Impact Student Performance and Progression: A Case Study of Early Intervention

Leah Hall, University of Charleston School of Pharmacy, Kristy H. Lucas, University of Charleston School of Pharmacy. Objective: Assess utilization of Enflux ActionPlans®, when used to empower academic advisors with individualized student data, to intervene at semester midpoint with students who are failing pharmacy courses. Methods: One cohort of students (N=51) is measured to determine semester outcomes (midpoint vs. final) using no ActionPlan® academic early intervention (fall 2020 semester) vs. ActionPlan-based academic early intervention (fall 2021 semester). The cohort selected for study experienced the last year of UCSOP’s former curriculum and the beginning of ActionPlan® use. Fall 2020 semester utilized a hand-extracted format for collecting student performance data (course averages and number of failed assessments) to send to advisors. Letters prompted advisors to meet with students regarding academic performance at midpoint. No accountability system was in place to track meetings or outcomes of intervention. Fall 2021 semester ActionPlans® included cohort course averages relative to individual averages, assessment scores per student, and were efficiently synthesized and shared with
Utilization Trends of Supplemental Instruction in a Doctor of Pharmacy Program

Richard C. Beuttler, Chapman University, School of Pharmacy, Jenna Stewart, Chapman University, School of Pharmacy, Reza Taheri, Chapman University. **Objective:** To examine utilization of weekly Supplemental Instruction (SI) delivered in tandem with challenging courses. **Methods:** Eight challenging courses in the Doctor of Pharmacy program offered SI sessions between Summer 2020 and Fall 2021 trimesters. Weekly SI sessions were held throughout the trimester via Zoom and run by students that had previously done well in the course. Each session was streamed live and recorded to be made available for students to watch at a later time. Utilization was measured by taking attendance for the live Zoom sessions and by totaling the number of recordings watched. Descriptive statistics was used to present quantitative findings of the study. **Results:** Of the eight courses, only three had consistent attendance records for every week and four additional courses had at least 10 weeks of live attendance data. The live attendance in each SI session ranged from 37% of the class to 1% of the class with a mean of 8% and a median of 6%. Attendance tended to be higher in the beginning of the trimester and immediately before exams. Six courses had data on the number of students who watched recordings. Of the 260 students in these courses 168 watched one or more recorded sessions. Courses averaged from 2.21 to 25.57 recordings watched per week. **Conclusions:** There seems to be a decreasing trend in weekly SI session attendance with spikes corresponding to exam dates. There was high variability in attendance and viewing of the recordings. The SI sessions are resource intensive both in terms of human and financial capital. Incentivizing measures should be instituted to improve utilization of the SI program.

A New LC-MS/MS Method for the Determination of Nifedipine, Bisoprolol, and Captopril in Human Plasma

Ahmed Ali, Notre Dame of Maryland School of Pharmacy, Sami El Deeb, Institute of Medicinal and Pharmaceutical Chemistry, Galal Magsy, Kafr Elsheikh University, Fahalla Belal, Mansura University, Liliya Logoya, Horbachevsky Ternopil National Medical University, Fawzi A. Elbarby, Pacific University Oregon. **Objective:** In this study, development and validation of a highly sensitive and accurate liquid chromatography-tandem mass spectrometric (LC-MS/MS) method was carried out for the concurrent estimation of nifedipine, bisoprolol, and captopril in real human plasma. **Methods:** Liquid-liquid extraction using tert-butyl methyl ether was efficiently applied for extraction of the analytes from plasma samples using silylafsil, as an internal standard. The chromatographic separation was carried out using an isocratic elution mode on X-terra MS C18 column (4.6 × 50 mm, 3.5 μm). The mobile phase consisted of methanol: 0.1 % formic acid (95:5, v/v) for determination of nifedipine and bisoprolol and acetonitrile: 0.1 % formic acid (70:30, v/v) for determination of captopril with a flow rate of 0.5 mL min⁻¹. Under positive ion electrospray ionization, the studied drugs were monitored and quantified on an API 4500 triple quadrupole mass spectrometer using Multiple Reaction Monitoring scanning mode. **Results:** Acceptable results regarding the different validation parameters of the analytes were obtained in accordance with US FDA recommendations for bioanalytical methods. The developed method was linear over concentration ranges of 0.5-130, 50-4500, and 0.3-30 ng mL⁻¹ for nifedipine, bisoprolol, and captopril, respectively. The method revealed a sufficient lower limit of quantification (LLOQ) in the range of 0.3-50 ng mL⁻¹, as well as high recovery percentages, ranged from 87% to 109% with inter- and intra-day precision variations less than 13%, indicating high bioanalytical applicability. **Conclusions:** The proposed method was efficiently applied to a pharmacokinetic study of a fixed-dose combination of the analytes in healthy male volunteers.

A Pilot Test of Group Dynamics Principles for Team Formation on Project-Based Learning in Pharmacy

Otito F. Iwuchukwu, Fairleigh Dickinson University, Dongmi Kim, Fairleigh Dickinson University. **Objective:** The affective component of learning based on team activities can be impacted by students’ mindset regarding
groups. Learners in a substance abuse research elective (Professional-Year 2) with longitudinal project-based components stated a strong aversion to group activities, with preference for individual activity when allowed. We aimed to minimize group participation hesitancy by giving students autonomy in choice of team formation approaches in order to examine the effects of team formation approaches on successful team dynamics. 

Methods: Choice of a student self-selected (SS) or an instructor randomized (IR) team formation approach was offered to learners for either of two project-based activities: a brief intervention or BI role-play and a review of reviews research symposia presentation), N = 25; 5 groups of 5 students per activity. Group development for the two approaches was studied using the Tuckman model with team dynamics evaluated over five stages—forming, norming, storming, performing and adjourning. We used an 8-point scale project evaluation rubric to gather student reports about group dynamics for the forming, norming, storming and performing phases. Reports were analyzed for differences in means for each project-based activity using SPSSv.27 (IBM Corporation). For the adjourning phase, we used an open-ended survey embedded in the course LMS and analyzed free text responses for themes related to team dynamics. 

Results: The SS team-approach was rated higher for team performance satisfaction compared with the IR approach. For individual learning and alignment with project tasks, the IR approach was preferred. 

Conclusions: Team formation methods impacted group dynamics and team performance. Higher performance leads to higher group grades. For courses with group projects, favorable team dynamics can impact students’ evaluation of the course.

Andrographolide Impact on Rodent Behavior

Melissa Beck, Cedarville University, Benjamin Adam, Cedarville University, Graham Heston, Cedarville University, Abigail Ruminski, Cedarville University, Rachael Tollerton, Cedarville University, Denise Jean-Louis, Ced, Samson Amos, Cedarville University. 

Objective: Andrographolide is a diterpene from Andrographis paniculata (Acanthaceae) that has been demonstrated to have effects on CNS disorders and CNS tumors. Given its ability to cross the blood-brain barrier and its potential use in the treatment of diseases of the CNS, andrographolide was evaluated for its potential to affect rodent behavior in a neurological screening battery. 

Methods: Male rats were dosed with 2.5 or 5 mg/kg andrographolide by intraperitoneal injection; chlorpromazine and apomorphine were used as positive control agents. At the time of peak effect, rats were tested in a functional observational battery and locomotor activity assessment without knowledge of group. 

Results: Rats in the andrographolide groups did not exhibit any neurobehavioral changes compared to controls. Chlorpromazine rats demonstrated clinical signs of CNS depression, including an increase in rats with half-closed eyes and flabby muscles, low arousal, slightly longer time to first step, and reduced numbers of rearing counts; an increased number of rats with impaired mobility/gait and lack of response to touch were also noted. Chlorpromazine rats also showed significantly lower distance traveled in the peripheral zone of the locomotor activity assessment. Apomorphine rats demonstrated clinical signs of CNS excitability and stereotypy including an increased number with gait abnormalities, excessive sniffing and pawing, and increased responsiveness to touch. Apomorphine rats also showed significantly higher basic and ambulatory activity counts, distance traveled in the central and peripheral zones, and significantly decreased time spent in the peripheral zone. 

Conclusions: These results indicate that andrographolide has no apparent effect on rodent behavior when examined at the time of peak effect following intraperitoneal administration at clinically relevant doses.

Assessment of Effectiveness of Biological Sciences Section Mentorship Program

Ligia Westrich, Fairleigh Dickinson University, Diane Calinski, Manchester University, Shannon Kinney, Western New England University, Manas Mandal, Roseman University of Health Sciences. Objective: To evaluate the longitudinal effectiveness and outcomes of the AACP Biological Sciences Section mentorship program offered to members since 2017. 

Methods: A 22-question electronic survey was designed using Qualtrics and sent to 406 members of the Biological Sciences Section, including participants and non-participants of the mentorship program. The survey was Internal Review Board approved. Participants’ and non-participants’ responses were evaluated using descriptive statistics and compared using the t-test. 

Results: Out of 406 members that received the survey, 51 responded; 37% of respondents participated in the mentorship program in the last 5 years. Respondents’ membership in the Section ranged from 1 to over 20 years. Forty-seven percent of the mentorship program participants attributed at least one peer-reviewed publication, 58% attributed at least one podium presentation, half of which indicated 5 or more presentations, and 71% attributed at least one external collaboration to the program. While program participants and non-participants had similar levels of satisfaction with career status, relationships among co-workers, and relationships across institutions, participants were significantly more satisfied with their relationships within the Biological Sciences Section (p=0.0015, Mann Whitney test). Most
COVID-19 Variants and Vaccine Efficacy: A Retrospective Analysis

Manas Mandal, Roseman University of Health Sciences. **Objective:** The objective is to provide an overview and retrospective analysis of data on coronavirus infectious disease 2019 (COVID-19) variants, vaccine formulations, real-world immune protection and recommendation for a booster dose. **Methods:** COVID-19 related keyword search and review of primary and tertiary literatures available in medRxiv, bioRxiv, PubMed, CDC, NIH and NIAID databases were employed. The search specifically focused on COVID-19 vaccine clinical trial and real-world vaccine effectiveness (VE) data, emergence of variants of concern (VOC), waning of immune-protection, and recommendation for a booster dose. **Results:** COVID-19 vaccine clinical trial and real-world data demonstrate strong, durable immunity against symptomatic disease caused by original virus (70-95% protection), and Delta variant (70-88% protection). Vaccine protection against hospitalization due to original virus or Delta variant infection was also high (90-100%). Durability of vaccine-induced immune protection waned after 4-6 months from vaccination. Waning immunity combined with low vaccination led to generation of VOCs including Omicron. VE against COVID-19 associated emergency care was higher after the 3rd dose (booster) than after 2nd dose. VE against Omicron-associated emergency care and hospitalization was 87% and 91% respectively for first 2 months that declined to 66% and 78% respectively ≥4 month after the booster. Overall, VE was generally higher protecting against hospitalization than emergency care need for both Delta and Omicron. Clinical data also indicate that hospitalization and death in unvaccinated person was significantly higher than vaccinated person. **Conclusions:** COVID-19 vaccines safe and effective with recommendation for a booster dose to enhance and sustain immune protection. Overall, decrease in vaccine effectiveness was observed against Delta variant with waning immunity. Yet, fully vaccinated and boosted individuals remained largely protected against Delta and Omicron variant associated hospitalization and death.

Enhance Cognitive Connection Between Basic Science and Pharmacy Practice

Emily R. Esposito, Sullivan University College of Pharmacy and Health Sciences, Kerry K. Fierke, University of Minnesota, Gardner A. Lepp, University of Minnesota, Anne Schullo-Feulner, University of Minnesota, Teresa L. Tinnell, Sullivan University College of Pharmacy and Health Sciences. **Objective:** Identify the impact of Intention and Reflection (I/R) practice on student cognitive connections in Pharmacology/Medical Chemistry and Pharmacotherapy courses with a valid/reliable assessment tool. **Methods:** In this mixed-methods study, second-year pharmacy students across two courses in two colleges of pharmacy were administered a novel instrument assessing cognitive connections across three timepoints while participating in I/R. Data were analyzed using paired sample t-tests and evaluated for reliability/validity. Qualitative I/R responses were coded for themes to assess students’ cognitive connection to pharmacy practice in both courses. **Results:** 81.5% of students (n=130) reported I/R as beneficial. Qualitative responses mapped connections to metacognition (63.8%), mindset (17.7%), engagement (15.4%) and application to practice (13.1%). Quantitative data showed significance in engagement (p=0.016); results for mindset and metacognition varied. Reliability analysis yielded pre-, mid-, and post-Cronbach’s alpha of 0.712, 0.792, and 0.798, respectively. Factor analysis confirmed validity, resulting in residuals across the collection timepoints with absolute values >0.05, indicating a good fit to the hypothesized model. **Conclusions:** Practicing I/R benefits students in both basic science and pharmacy practice courses. Quantitative results for engagement are significant and include student increases in pride, belonging, and energy for the pharmacy profession. Qualitative results indicate student awareness of learning outcomes and connections. Students’ remarks were unequivocally positive, stating “This practice has been helpful in terms of making me think at a deeper level about what I am learning not only in this class, but in other classes, and how that knowledge that I gain will be used in my career as a pharmacist.”

Evaluation of the Efficacy of Duocarmycin SA on Acute Myeloid Leukemia Cells In Vitro

Olivia L. Francis-Boyle, Loma Linda University, William Chen, Loma Linda University, Kristopher E. Boyle, Loma Linda University, Terry Williams, Loma Linda University, Natalie Drew, Loma Linda University, Nhi Nguyen, Loma Linda University. **Objective:** DSA’s antitumor activity has been demonstrated in different types of cancers, but not in acute myeloid leukemia. The
Objective of this study was to evaluate the cytotoxic effects of Duocarmycin SA on Acute Myeloid Leukemia (AML) cells in vitro. Our hypothesis was that DSA will induce killing of AML cells at sub-nanomolar concentrations. Methods: Immunophenotyping of AML cells was conducted using flow cytometry. The IC50 of DSA was determined by culturing AML cells with different concentrations of DSA (1-1000 pM) at 72 hrs. Cell viability, apoptosis and proliferation of AML cells were assessed using trypan blue exclusion, Annexin V/7-AAD and colony forming assays, respectively. Statistical analyses were performed using two-tailed, unpaired t-tests and a p-value of < 0.05. Results: AML cells were CD33+, CD14+, CD13+, CD14+, CD4+. The IC50 of DSA for Molm14 cells was ~14 - 20 pM. DSA significantly reduced the viability and increased apoptosis of AML cells in a dose-dependent and time dependent manner with the greatest effect observed at 72 hrs. At 72 hrs, we observed 90%, 52% and 13% viable cells at 20 pM, 100 pM and 500 pM respectively as well as 6%, 6%, 8%, 45%, 74% apoptotic cells in untreated, vehicle, 20 pM, 100 pM and 500 pM conditions respectively. DSA significantly reduced the ability of Molm 14 cells to generate colonies. 141, 139, 139, 2 and 0 colonies were observed in untreated, vehicle, 20 pM, 100 pM and 500 pM respectively. Conclusions: DSA induces cytotoxic effects in Molm 14 cells in the picomolar range. DSA also induces apoptosis as the mechanism of cell death and reduces the ability of these tumor cells to proliferate and generate colonies.

Honokiol Reduces Blood Pressure in Hypertensive Rats through Modulation of Arachidonic Acid Metabolism

Fawzi A. Elbarbry, Pacific University Oregon, Nicholas Moshirian, Pacific University. Objective: We investigated the effects of Honokiol, a polyphenol, on Arachidonic acid (AA) metabolism in the kidney and its effect on arterial blood pressure, using spontaneously hypertensive rats (SHR) as our animal model system. Methods: Rats (4 groups, 8 animals/group) were treated for 2 weeks with Honokiol (0, 5, 20, and 50 mg/kg) administered by intraperitoneal daily injections. Mean arterial pressure (MAP) was measured at 3-day intervals throughout the study. At the end of the treatment, rats were euthanized, followed by preparation of kidney microsomes to measure enzymes involved in regulation of vasoactive metabolites: CYP4A, the key enzyme in the formation of 20-hydroxyeicosatetraenoic acid, and the soluble epoxide hydrolase (sEH), which is responsible for the degradation of the vasodilator metabolites such as epoxyeicosatetraenoic acids. Effect of Honokiol on kidney expression of CYP4A was investigated by immunoblotting. Results: We found that treatment with Honokiol lead to significant reductions in both, the expression and activity of renal CYP4A isozymes, as well as the activity of sEH. Consistent with these data, we have found that treatment with Honokiol resisted the progressive rise in MAP in the developing SHR in a dose-dependent manner. Conclusions: This is the first demonstration that Honokiol modulates the metabolism of AA by both P450 enzymes and sEH in SHR rats. This may represent a novel mechanism by which Honokiol protects SHR rats against the progressive rise in blood pressure.

Human Histone Deacetylase 8 Catalyzes the Deacylation of Acyl Lysine Residues

Gregory A. Polsinelli, University of Charleston, Harrison Yoo, University of Charleston School of Pharmacy. Objective: Histone deacetylases catalyze the hydrolysis of ε-acetyl-lysine residues of histones as well as longer chain acyl groups. Removal of acetyl groups results in condensation of chromatin structure and repression of gene expression. Human class I and II histone deacetylases are said to be zinc-dependent in that they require divalent zinc ions to catalyze the deacetylation reaction. HDACs are anti-oncogenic targets due to their role in regulating transcription. HDAC8 inhibition may be important in preventing uncontrolled cell division because delivering histone deacetylase inhibitors to cancer cells may give rise to the progression of apoptosis. Central hypothesis: HDAC8 catalyzes the deacylation of acyl lysine residues. Methods: HDAC8 activity was analyzed in the present study with various synthetic peptides where the target lysine was modified with medium-chain fatty acyl groups. Kinetic data were determined for each p53 peptide substrate. Results: The results suggest that there was HDAC8 deacetylase activity on peptide substrate as well as deacetylase activity with acylated peptide substrate variants. HDAC8 inhibition by hexanoic and decanoic acid was also examined. The Ki for hexanoic and decanoic acid were determined to be 2.35 ± 0.341 and 4.48 ± 0.221 mM, respectively. Conclusions: HDAC8 had activity with physiological peptide substrate (AcRHKK(acetyl)-AMC) based on p53 sequence. AcRHKK(dec)-AMC had the highest catalytic reaction efficiency per quantity substrate assayed with the highest kcat/KM among substrates tested. Hexanoic acid exhibited greater HDAC8 inhibition compared to decanoic acid with a Ki that is approximately one-half of that determined for decanoic acid. Further HDAC8 studies of enzyme kinetics will help elucidate additional features that are unique to HDAC8, allowing for the development of HDAC8-specific inhibitors as cancer therapeutics.
Impact of Mindfulness Exercises and Weekly Wellness Messages on Pharmacy Students’ Perceived Stress and Resilience

Shankar Munusamy, Drake University; Michael H. Nelson, Drake University; Ronald Torry, Drake University. **Objective:** To evaluate the impact of mindfulness sessions and weekly wellness messages embedded in the course content on pharmacy students’ wellbeing as measured through a perceived stress scale and resilience scale. **Methods:** Pharmacy students enrolled in Introduction to Pharmaceutical Sciences (P1 students) and Principles of Drug Action II (P2 students) were offered mindfulness sessions at the beginning of each class session and weekly wellness messages for ten weeks to improve their physical, emotional, and social wellness. Students’ perceived stress levels and resilience were measured using the perceived stress scale and Connor-Davidson resilience scale, respectively - before and after ten weeks of exposure to wellness resources. Wilcoxon signed-rank tests were used to compare the mean scores between pre- and post-intervention. **Results:** Following the 10-week intervention, P2 students demonstrated a significant decrease in perceived stress scores (from 18.95 +/-0.44 to 17.09 +/-0.57; p<.035) and an increase in resilience scores (from 26.76 +/-0.31 to 29.3 +/-0.31; p<.004). Although a similar trend was noted among P1 students in their perceived stress (from 18.38 +/-0.46 to 16.82 +/-0.54; p<.053) and resilience scores (from 26.63 +/-0.44 to 27.3 +/-0.20; p<0.447), the differences were not statistically significant. Nevertheless, 53.57% (30/56) P1 students and 35.94% (23/64) P2 students indicated that they started practicing mindfulness outside of the class. **Conclusions:** Our findings suggest that conducting mindfulness sessions in classrooms and sharing wellness messages promote student wellness. Hence, motivating and supporting faculty members to embed wellness in their classrooms or courses could be an effective way to improve student wellness.

Longitudinal Impact Assessment of Mnemonics Use on Pharmacy Students’ Knowledge Retention, Application, and Exam Performance

Shankar Munusamy, Drake University; Carrie Koenigsfeld, Drake University; Ronald Torry, Drake University. **Objective:** To assess the impact of mnemonics’ use in a Pharmacology course offered to P2 pharmacy students on exam performance and their longitudinal perceptions about knowledge retention and clinical application. **Methods:** Eighteen mnemonics were developed and used in a pharmacology course covering endocrine and autonomic pharmacology topics. A non-anonymous survey (survey 1) was administered after exams to collect students’ self-reported use of mnemonics on exam questions. At the end of the semester, on an anonymous survey (survey 2), students rated the impact of mnemonics’ use on their knowledge retention, clinical application, critical thinking, reduction in learning anxiety, and increased confidence while answering questions on exams. To assess retention, an anonymous follow-up survey (survey 3) was administered to the same student cohort at the end of a Therapeutics course five months later. **Results:** Analysis of survey 1 findings (55% response rate) revealed that mnemonics’ use significantly improved students’ exam performance (99.44% correct with mnemonics vs. 87.27% correct without mnemonics; p<.0001). Longitudinal survey 3 findings were consistent with survey 2 and revealed that students consistently agreed mnemonics’ use improved their knowledge retention (71.43%) and clinical application (76.17%). Similarly, students agreed that mnemonics helped them think critically while answering exam questions (64.29%), reported higher confidence during test-taking (66.67%), and reduced learning anxiety with mnemonics’ use (64.29%). **Conclusions:** Mnemonics’ use improves students’ exam performance and facilitates knowledge retention, application, critical thinking, and confidence while test-taking. It also lowers learning anxiety, which prepares them well for future Pharmacy courses.

Potentiation of Recombinant NP and M1-Induced Cellular Immune Responses and Protection by Physical Radiofrequency Adjuvant

Yibo Li, University of Rhode Island; Zhuofan Li, University of Rhode Island; Yiwen Zhao, University of Rhode Island; Xinyuan Chen, The University of Rhode Island. **Objective:** The objective of this study is to test whether our recently developed physical radiofrequency (RF) adjuvant (RFA) can significantly enhance influenza nucleocapsid protein (NP) and matrix protein 1 (M1)-induced cytotoxic T lymphocyte (CTL) responses. **Methods:** Mice were exposed to RF or sham treatment followed by intradermal injection of recombinant NP and M1 into RF or sham-treated skin or left non-immunized. Mice were also intramuscularly immunized with recombinant NP and M1 in the presence of AddaVax. Immunization was repeated 3 weeks later. Systemic side effects were monitored after each immunization. Humoral and cellular immune responses were measured after boost immunization. Mice were further challenged with a lethal dose of influenza A/Puerto Rico/8/1934 (H1N1) viruses. Body weight loss and survival were monitored daily for 14 days. **Results:** Recombinant NP/M1 immunization in the presence of RFA elicited potent anti-NP CTLs and conferred significant protection against viral challenges, while
NP/M1 immunization alone failed to elicit significant CTL responses or confer significant protection. Interestingly, RFA failed to elicit potent anti-M1 CTL responses or anti-NP or anti-M1 antibody responses. Different from RFA, AddaVax adjuvant significantly increased NP-specific antibody responses but not CTLs. NP/M1 immunization in the presence of RFA or AddaVax similarly reduced body weight loss, while only the former significantly increased the survival. NP/M1 immunization in the presence of RFA didn’t significantly increase serum IL-6 release and rather reduced IL-6 release after boost immunization. NP/M1 immunization in the presence of RFA didn’t induce significant local reactions or increase body temperature of mice. 

Conclusions: Our study indicated the high potency and safety of the novel physical RFA to potentiate NP/M1-induced CTL responses against influenza A viruses.

Scaffolding Concepts in Microbiology and Infectious Disease through an Escape Game

Sarah P. Collier, Lipscomb University College of Pharmacy, Matthew J. Vergne, Lipscomb University College of Pharmacy. Objective: To scaffold student learning of the tier one and tier two human fungal and parasite pathogens through an escape game in order to enhance concept retention. Methods: First-year student pharmacists enrolled in an integrated biomedical sciences laboratory course participated in groups of approximately four students each with the challenge to “escape” in one hour. The exercise included three stages of scaffolding to support engagement and concept application. First, groups completed elementary cognitive-based puzzles to classify organisms. Students opened a locked box and used deductive reasoning to identify a single organism for the remainder of the game. A crossword puzzle integrated microbiology, epidemiology, and pharmacology concepts related to this organism. Last, students used a four-letter gene code to connect human genetics and its significance to persons around the world. Independent progression from each stage was affirmed through validated data entry. Formative and summative assessments in the following weeks were mapped to organism identification and recall. Results: Forty-two first-year student pharmacists completed the escape game activity. The majority of groups escaped within 45 minutes; however, one group was unsuccessful in their “escape”. A marked level of engagement and enjoyment among students was observed. Formative and summative assessment data in the five weeks following the lab support evidence of concept retention. Conclusions: Through a scaffolding approach, students were able to learn pathogens of high priority in a user-friendly and accessible experience. Student pharmacists successfully collaborated in peer groups during this active learning escape game exercising skills like problem-solving and critical thinking.

Synthesis and Pharmacological characterization of Novel (α4)2(β2)3 Nicotinic Acetylcholine Receptor Positive Allosteric Modulators

Sahil Seth, Department of Pharmaceutical Sciences, Northeastern University, Boston, MA, USA., Farah Deba, The University of Texas at Tyler, Samantha Cheeks, Department of Neurobiology and Behavior, University of California Irvine, Irvine, CA, USA., Harvens Beauzile, Department of Pharmaceutical Sciences, Northeastern University, Boston, MA, USA., Christie D. Fowler, Department of Neurobiology and Behavior, University of California Irvine, Irvine, CA, USA., Ganesh Thakur, Northeastern University, Ayman Hamouda, The University of Texas at Tyler. Objective: The (α4)2(β2)3 nAChR play a critical role in tobacco addiction (nicotine dependence), a leading cause of disease and death worldwide. The goal of this proposal is to develop novel positive allosteric potentiators (PAM) that target the (α4)2(β2)3 nAChRs and modify behaviors characteristic leading to tobacco use. Methods: Computational docking analyses was used to guide the design of a series of desformylflustrabromine derivatives (GAT1710-GAT1726). Compounds were chemically synthesized and their effects on Xenopus oocytes expressing various nAChR were determined using two-electrode voltage-clamp recording. Intravenous nicotine self-administration in C57BL/6J mice was used to examine the in vivo effect of GAT1712. Results: Among compounds tested, GAT1712 exhibited improved (α4)2(β2)3 nAChR potentiation and (α4)2(β2)3 to (α4)3(β2)2 nAChR selectivity. Another two derivatives (GAT1724 and GAT1725) also showed a promising (α4)2(β2)3 to (α4)3(β2)2 nAChR potentiation selectivity. Intraperitoneal injection of GAT1712 at 6 and 9 mg/kg significantly reduced nicotine intake in a mice model of intravenous nicotine self-administration. Conclusions: GAT1712 and other derivatives identified in this study provide leading candidates for the development of (α4)2(β2)3 nAChR-selective PAMs to better understand the pharmacological effects of α4β2 nAChRs in behaviors characteristic of nicotine’s actions, which may thereby lead to future therapeutic implications.

ToxiClue: A Murder Mystery Game to Enhance Pharmacy Student Learning in a Toxicology Course

Amy-Joan L. Ham, Belmont University, Kelley Kinningham, Belmont University, Angela Clauson, Belmont University. Objective: To determine the educational
value of a “Clue” based game to assess learning in a Toxicology course for pharmacy students. **Methods:** A game was developed based on the board game “Clue”. Instead of weapons and rooms, the game was designed to use toxins and local destinations, and the suspects were faculty with clever drug-related names. Students answered toxicology questions in order to gain an advantage with “Clue Cards”. Once students “solved” the poisoning, they had to properly identify the place, suspect and toxin along with the correct antidote. The students were administered a knowledge-based pre-test and post-test and a survey about the game, the experience, and their learning. **Results:** Twenty students participated in the game and completed the knowledge-based pre- and post-quiz. Fourteen students completed the survey. The quiz scores increased by an average of 6%, while 47.6%, 28.6%, and 23.8% students had increasing, decreasing or equal scores, respectively. The greatest score increase and decrease were +7 and -3 points, respectively. All 14 survey respondents “strongly agreed” the game was fun, provided them an opportunity to apply what they had learned, should be incorporated into future courses and was an important supplement to the course. Thirteen respondents “strongly agreed” (1 “agreed”) the game was a valuable contribution to their learning and was a good review of course material, and 11 “strongly agreed” (3 “agreed”) the game allowed them to think critically and helped them connect concepts in new ways. Answers to other questions in the survey were overwhelmingly positive. **Conclusions:** The game was well received and increased learning of students in a positive and engaging experience.

**Chemistry**

**A Guide for Writing a Strong Hypothesis for Grant Submissions**

Andrew Coop, University of Maryland, Peter Swaan, University of Maryland. **Objective:** As two senior faculty members with significant experience of reviewing applications and obtaining funding from a broad range of agencies (including NIH (R-, F-, and K-series), AFPE, AACP), it is clear that many junior investigators require mentorship on writing a strong hypothesis, as many include weakening terms that result in a non-testable statement. This poster will act as a simple, permanent, and sharable guide to writing a strong hypothesis for trainees and junior faculty. **Methods:** A hypothesis is a testable statement created from observations, and used to make predictions. As such, a strong hypothesis naturally leads to and guides experiments that test the validity of the hypothesis. Terms such as may, might, could, should, and would will be incorporated into statements and we will show that such terms lead to a non-testable statement. We will also demonstrate how a strong hypothesis leads naturally to the design of experiments that test the hypothesis, and also an inappropriate experimental design that does not test the hypothesis. **Results:** The poster will also demonstrate statements that are too complex, focused on the researcher and facilities rather than the scientific question, and other common errors observed. **Conclusions:** The goal of this poster is to provide a guidance document on writing a strong hypothesis as mentorship towards submitting a successful proposal for funding.

**A Survey of New Uses of FDA Approved Drugs via Drug Repurposing**

Rosalie White, The Daniel K. Inouye College of Pharmacy, University of Hawaii at Hilo, Dianqing Sun, The Daniel K. Inouye College of Pharmacy, University of Hawaii at Hilo. **Objective:** To survey new uses of recent FDA approved drugs using drug repurposing strategy and analyze their drug characteristics, generic/brand names, dosing differences, and original and new indications. **Methods:** Literature search was performed using online databases and resources including FDA drug approval database, Lexi-comp, and scientific journals. **Results:** Notable classes from drug repurposing include phosphodiesterase 5 inhibitors, e.g., sildenafil (Viagra) and tadalafil (Cialis) from erectile dysfunction to pulmonary arterial hypertension or benign prostatic hyperplasia. The diabetic GLP-1 agonists liraglutide (Victoza) and semaglutide (Ozempic) have been repurposed to weight loss medications with brand names of Saxenda and Wegovy, respectively. Interestingly, another antidiabetic class of oral SGLT2 inhibitors dapagliflozin (Farxiga) and empagliflozin (Jardiance) was recently approved to treat chronic kidney disease and/or heart failure. Vioxx (Olbrix), previously as an antidepressant, was approved for the treatment of attention-deficit hyperactivity disorder in 2021. Notably, the anticancer drugs have the most approved new indications for treating diverse cancers among FDA approved drugs. For example, since the original approval of nivolumab (Opdivo) for advanced melanoma in 2014, over 20 new indications have been approved for other diverse cancer types either as a monotherapy or in combination with the other immunotherapy agent, along with first-line or adjuvant therapy options. Finally, the drug class and characteristics, dosing regimens, new indications of these medications will be presented. **Conclusions:** There is a high medical need for new and effective drug therapies. Drug repurposing...
represents an attractive and effective strategy to discover new drugs, given that the pharmacokinetic and safety profiles of existing drugs are already known. As such, developing new uses of approved drugs can greatly shorten drug discovery timelines with potentially lower cost.

**Design, Synthesis, Computational Studies, and Biological Evaluation of Novel Salvinorin-based Opioid Receptor Agonists and Antagonists**

Benjamin J. Sawyer, University of Mississippi, Nicholas Akins, University of Mississippi, Salahuddin Mohammed, University of Mississippi, Pankaj Pandey, University of Mississippi, Seong Kim, US Department of Agriculture (USDA) Agricultural Research Service (ARS), Jason Paris, University of Mississippi, Hoang V. Le, University of Mississippi. **Objective:** Dual kappa (KOR) and mu opioid receptor (MOR) agonists might temper undesirable adverse effects while retaining analgesic activity over selective opioid receptor agonists. Modulation of KOR via selective, short-acting antagonism may reduce cocaine withdrawal and the associated negative affective symptoms that can contribute to relapse. **Methods:** Our lab has introduced various 6,5-fused rings to C2 of the salvinorin scaffold via an ester linker. We also synthesized and studied various amide and triazole likers at C2 of the salvinorin scaffold, elucidated their roles in opioid receptor activity, selectivity, and cellular signaling. Furthermore, we studied a lead selective, salvinorin-based KOR antagonist (1) as well as nor-BNI on C57BL/6N mice for spontaneous cocaine withdrawal. **Results:** In vitro studies showed that many of the salvinorin ester compounds have dual KOR/MOR agonism. In vivo studies on the lead dual KOR/MOR agonist demonstrated supraspinal thermal analgesic activity while avoiding anxiogenic effects in male mice. We discovered a salvinorin amide that acts as a potent, selective MOR agonist. Furthermore, administration of the KOR antagonist 1 reduced spontaneous cocaine-withdrawal behaviors, comparable to nor-BNI. Moreover, 1 produced anti-anxiety-like behavior in the light-dark transition test that was not observed with nor-BNI. The pharmacokinetic profile of 1 is promising with accumulation in the central compartment evident after systemic administration. Unlike nor-BNI, 1 appeared to be a short-acting compound (average half-life (t1/2) = 3.75 h) with an ideal t1/2 in the brain (5.2 h). **Conclusions:** The two objectives above were met. We also identified pertinent interactions between 1 and KOR via computational studies, including induced-fit docking, mutagenesis, and molecular dynamics simulations, to gain insight into the design of future selective, potent, and short-acting salvinorin-based antagonists.

**Discovery and Development of L-γ-Methylene glutamine-based Compounds for Breast Cancers, Glioblastoma, and Head and Neck Cancers**

Md Imdadul H. Khan, University of Mississippi, Fakhri Mahdi, University of Mississippi, Patrice Penfornis, University of Mississippi, Md Imran Hossain, University of Mississippi, Pier Paolo Claudio, University of Mississippi, Jason Paris, University of Mississippi, Hoang V. Le, University of Mississippi. **Objective:** In cancer cells, glutaminolysis is the primary source of biosynthetic precursors, and recent efforts to develop amino acid analogs to inhibit glutamine metabolism in cancer have been extensive. L-γ-methylene glutamic acid amides could be novel therapeutics for cancers such as breast cancers, glioblastoma, and head and neck cancers. **Methods:** Our lab previously discovered many L-γ-methylene glutamic acid amides that were shown to be as efficacious as tamoxifen or olaparib at arresting the cell growth of MCF-7, SK-BR-3, and MDA-MB-231 breast cancer cells by 24 or 72 h of treatment. None of the compounds inhibited the cell growth of benign MCF-10A breast cells. We further studied the tert-butyl ester and ethyl ester prodrugs of these compounds, as well as of the cyclic metabolite, and tested them on the three cancer cell lines MCF-7, SK-BR-3, and MDA-MB-231. Pharmacokinetic (PK) studies were performed on the lead L-γ-methylene glutamic acid amide (compound 5) to establish the tissue-specific distribution and other PK parameters. Furthermore, L-γ-methylene glutamic acid amides were tested on head and neck cancer (HN8, HN12, HN30, and HN31) and glioblastoma (BNC3 and BNC6) cell lines. **Results:** The tert-butyl and ethyl ester prodrugs were observed to also suppress the growth of these cancer cells, but less in potency in compared to their parent L-γ-methylene glutamic acid amides. Compound 5 displayed moderate exposure in the brain, kidney, and liver tissues. Furthermore, L-γ-methylene glutamic acid amides effectively suppress the growth of head and neck cancer and glioblastoma cell lines by 24 or 48 h of treatment. **Conclusions:** These results suggest broad applications of these L-γ-methylene glutamic acid amides in anticancer therapy. Specific targets of these compounds are being studied to develop next generations of novel anticancer agents.

**Discovery and Development of Novel Thrombin Inhibitors**

Ernané Souza, Palm Beach Atlantic University. **Objective:** To design, synthesize, and determine preliminary pharmacological activities of a focused molecular library toward the development of a new class of
anticoagulant drugs that target thrombin through an allo-
steric mechanism of inhibition. **Methods:** Modern medi-
cinal chemistry and translational science strategies are
employed for the rational design of structurally optimized
molecules, determination of their thrombin inhibitory
activities, and mechanism of action. **Results:** While syn-
thesizing small molecular weight structural mimics of
heparin, a novel small-molecule was isolated as a reaction
byproduct and subsequently characterized as an allosteric
thrombin inhibitor. This byproduct was found to be a new
molecular entity unrelated to any anticoagulant used
today. Following this discovery, structural analogues of
the newly found molecule were synthesized to advance
understanding of the underlying chemical requirements
for thrombin inhibition by this new class of compounds.
Preliminary pharmacological studies with the focused
library of synthetic compounds are currently ongoing.
**Conclusions:** A new class of thrombin inhibitors has been
discovered and characterized. Lead optimization of this
novel class of compounds will assist in the selection of
drug candidates to be used for the prevention and treat-
ment of thromboembolic diseases.

**Δ8-THC: An Old Cannabinoid with New Interest**

Chad Johnson, University of Maryland, Andrew
Coop, University of Maryland, Natalie Eddington, Univer-
sity of Maryland. **Objective:** The world of cannabis was
forever changed when the 2018 Farm Bill decriminalized
Cannabidiol (CBD), but not the psychoactive component
(Δ9-tetrahydrocannabinol, Δ9-THC). This had the unin-
tended outcome of placing another cannabinoid (8-THC)
in a strange legal situation. Specifically, Δ8-THC has psy-
choactive activity like Δ9-THC but can be made from
CBD - and was thus led to a market as a “legal” substitute.
This poster will explain the details of Δ8-THC and provide
critical information for pharmacists as they increasingly
encounter and counsel patients on the topic of Δ8-THC,
and serve as a resource for faculty in providing education
on Δ8-THC. **Methods:** A specific series of educational
materials covering the science and pharmacology of
Δ8 was developed and utilized in both the professional
program and the MS in Medical Cannabis Science and
Therapeutics program. **Results:** The content focused on
the Δ8-THC’s history and isolation, preparation from
CBD, stability, pharmacology, and the regulatory aspects.
Scant peer-reviewed literature exists on the impact of Δ8-
THC on the human body, but it does appear that Δ8-THC
appears to be a less potent version of Δ9-THC (which has
led to the names derived from “Δ9-lite”) **Conclusions:**
The cannabis field is progressing quickly and, as such,
requires our MS and PharmD programs to quickly evolve
and adapt to keep pace. For our students to be pioneers in
the cannabis industry, they must have adequate knowledge
of emerging trends within the field and critically evaluate
available data to make effective recommendations to
patients and public health professionals.

**Continuing Professional Development**

**A Mindfulness Practice Elective for Reducing Stress and Promoting Quality of Life Among Pharmacy Students**

Brianna M. McQuade, University of Illinois Chicago, Jennie B. Jarrett, University of Illinois Chicago. **Objective:** Describe the impact of a mindfulness elective on pharmacy student stress and quality of life. **Methods:** This is an IRB-approved, repeated measures survey study. First, second, and third year pharmacy students who par-
ticipated in a mindfulness elective recorded their per-
ceived stress and quality of life (QOL) at baseline and 4
weeks post course completion. Non-participating students (controls) were also asked to record stress and QOL. The 5 Facet Mindfulness Questionnaire was used to measure mindfulness trait level; Perceived Stress Scale (PSS) was used to measure stress; and the SF-12 v 2 Health Related Quality of Life Scale (SF-12 v2) was used to measure QOL. Co-primary outcomes were the comparison between controls and participants in stress and QOL 4
weeks post course completion. The secondary outcomes included change in stress and QOL among participants.

**Results:** At 4 weeks post course, mindfulness elective par-
ticipants (n = 76) had statistically lower stress compared to
controls (n = 56) (PSS score of 18.58 [SD 5.85] and 20.79
[SD 6.31], respectively [p < 0.0001]). Mental health QOL
scores were statistically higher in the participant group
compared to the control group (41.94 [SD 8.58] and 36.93
[SD 9.59], respectively, with p < 0.0001). Among partici-
pants, PSS was statistically lower 4 weeks post course ver-
sus baseline (4 weeks post course 18.58 [SD 5.85] vs
baseline 21.86 [SD 5.46], p < 0.0001). Mental health QOL
was statistically higher, with average baseline score
of 38.17 [SD 8.57] and 4 weeks post score of 41.94 [SD
8.58], p < 0.001). **Conclusions:** A mindfulness elective
can reduce stress and improve mental health QOL in phar-
my students. Options for embedding mindfulness prac-
tice into the pharmacy curriculum should be highly
considered to support student wellness.

**Empowering Pharmacy Students Future Financial Success**

M. Jeanna Sewell, Auburn University, Sylvia Rogers,
Auburn University Harrison School of Pharmacy. **Object-
ive:** To address the need for personal finance education in
our school of pharmacy, a finance elective was developed using innovative teaching strategies such as personas to help students make well-informed choices related to student loan repayment, budgeting, and planning for retirement. Personal finance professional development could be beneficial to help students improve their future financial wellbeing. **Methods:** Mixed methods research design was used to determine the impact of the course. Retrospective data were collected and analyzed including pre- and post-assessments, assignments, posts from discussion boards, and a follow-up questionnaire. Qualitative data were analyzed through content analysis and quantitative data were analyzed using dependent t-tests. **Results:** Qualitative analysis revealed two themes: students came to feel that personal finance was something that could be managed proactively and felt empowered to create a financial plan that included strategies for budgeting, paying off student loans and other debt, saving, and investing. Quantitative analysis of five of the ten assessment questions with matching counterparts in pre- and post-assessment had statistically significant differences. Most students who responded to the follow-up questionnaire had completed activities or planned to complete activities related to making changes to their personal finance habits. **Conclusions:** Pharmacy students are entering the workforce with high incomes but saddled with debt. A personal finance elective course has the potential to equip students with the knowledge needed to be financially successful. Schools of pharmacy should work towards offering professional development to students to assist them in learning about personal finance due to the high cost of obtaining a pharmacy degree and likelihood of entering the workforce with debt.

**Expanding Preparatory and Assessment Strategies to Evaluate NAPLEX Readiness and Elevate First-Time Pass Rates**

Mohd Shahid, Chicago State University, Edward Ofori, Chicago State University, Rahul Garg, Alabama College of Osteopathic Medicine, Brandle Blakely, Chicago State University, Daniel Kerner, Chicago State University College of Pharmacy, Paul Fina, Chicago State University, Jeremy Hughes, Chicago State University. **Objective:** The current presentation seeks to describe a multi-layered approach to assess student readiness for standardized exams that includes identifying and supporting students at risk for struggling. **Methods:** After a root cause analysis on low first-time pass rates for the North American Pharmacist Licensure Examination (NAPLEX), the offices of Academic Affairs and Assessment collaborated with faculty committees to restructure and enhance existing licensure examination preparation efforts. Outcomes were identified, including increased exposure to standardized examination questions, additional content reviews, and addressing the affective domain (mindsets, imposter phenomenon, and test anxiety). A literature review and discussion with comparator programs was conducted and approaches were evaluated. **Results:** A multi-phase approach for NAPLEX preparation involving curricular and co-curricular arms, was implemented to improve student self-awareness and readiness. Students complete a foundational assessment prior to professional year one (P1) and progress assessments at key check-ins as they progress through the curriculum. Standardized exam style questions are mapped to NAPLEX competencies and test-taking scenarios are designed to simulate actual licensure examination conditions. Associated remediation strategies have been developed to support students performing below targeted thresholds. Supportive approaches include personalized check-ins, review sessions, self-reflection, and action plan development. Post-implementation surveys of P1 and P2 students demonstrated increased overall awareness and motivation, and perceptions that they are better prepared for standardized examinations. **Conclusions:** NAPLEX preparatory approaches consisting of content reviews, a layered assessment strategy, and elements to address mindset and test anxiety, can be used to identify and support students at risk for struggling on standardized examinations. These approaches can improve student self-awareness of abilities and guide students towards acquiring the necessary knowledge, skills, and mindsets to be successful in NAPLEX.

**How Do Students Study? A Survey of Learning Techniques Employed by Pharmacy Students**

Jennifer N. Wisniewski, Medical University of South Carolina, Sierra Simmons, Medical University of South Carolina College of Pharmacy, Jessa Mae Sabate, Medical University of South Carolina College of Pharmacy, Nichole Arroyo, Medical University of South Carolina College of Pharmacy, Christopher Taylor, Medical University of South Carolina College of Pharmacy, Cameron Brakefield, Medical University of South Carolina College of Pharmacy, Mitesh Patel, Medical University of South Carolina College of Pharmacy. **Objective:** Students in higher education often use ineffective or inefficient means to prepare for class and assessments. This study asked pharmacy students how they prepare for learning and assessments to determine whether a new course focused on improving students’ metacognitive abilities is needed. **Methods:** First-, second-, and third-year pharmacy students were given a survey regarding their current learning
strategies, specific to before-class preparation, in-class learning, and exam preparation. Eight popular study techniques were chosen by the research team to include in the survey questions. Students used a Likert scale from always to never to indicate use of these techniques before and during class. Exam preparation survey questions asked participants to rank the strategies in order of use. Data were summarized using descriptive statistics. All survey data were anonymous. **Results:** Response rate for the survey was 82.5% (n=170/206). Based on survey responses, most participants did not prepare for class via any means, and when they did prepare, strategies reported as used always or often included highlighting/underlining or skimming the lecture material (69%). During class, 83% of the participants reported highlighting and underlining as always or often. Students ranked highlighting/underlining as the first exam preparation strategy (31%) and rereading lecture material/rewatching lectures as the second choice (29%). When individual years were reviewed, these trends remained. **Conclusions:** These data show that pharmacy students continue to use inefficient and ineffective study strategies at the doctorate level to learn. These data will be used by faculty to create a new course in metacognitive strategies to assist student learning.

**Impact of Implementing Drug Information Certificate Program for Hospital Pharmacists**

Rasha Al Anany, Hamad Medical Corporation, Sara Mahmoud, Hamad Medical Corporation, Amy H. Heck Sheehan, Purdue University, Dania Al Khiyami, Hamad Medical Corporation, Palli Abdulruf, Hamad Medical Corporation, Wessam Al Kassem, Hamad Medical Corporation, Moza AlHail, Hamad Medical Corporation. **Objective:** At Hamad Medical Corporation (HMC), pharmacists provide comprehensive patient care and are an integral part of the healthcare team. The Continuous Professional Development Office at HMC, in collaboration with Purdue University, implemented a drug information certificate program for pharmacists. This is a description of the needs assessment pre-course and evaluating pharmacists’ perception of the certificate program. **Methods:** The needs assessment survey was designed based on the best practice for pharmacists’ proficiency in providing drug information. The program consisted of four modules extended over 8 weeks. The course was a blend of self-study, live presentations and practice based activities. The course was attended by 138 participants in three cohorts. The post completion survey consisted of six questions evaluating the effectiveness of the program and faculty member. **Results:** Needs assessment results demonstrated proficiency in understanding different types of study design. However, more than 30% reported that they require improvement in interpreting statistical and clinical significance and writing drug monograph. The post completion survey was completed by 64 respondents (46% response rate). More than ninety percent of respondents reported that all learning objectives were covered in an ‘outstanding’ manner. More than 85% reported that the faculty member was exemplary, had a vast knowledge of the subject and was helpful in expanding key concepts. The most popular learning format was the live online videos. **Conclusions:** This is the first known assessment of drug information proficiency of hospital pharmacists across Hamad Medical Corporation. In collaboration with Purdue University, the CPPD office implemented a comprehensive drug information certificate program to enhance the proficiency of pharmacists which showed extraordinary results.

**Interdisciplinary Learning Community to Facilitate iPad Usage in the Classroom**

Jason W. Guy, University of Findlay, Christine Denecker, University of Findlay, Nicole Williams, University of Findlay, Angie Huber, University of Findlay, Julie H. Oestreich, University of Findlay. **Objective:** To disseminate the perceived strengths and challenges of iPad integration to prepare, deliver, and/or assess instruction through an interdisciplinary learning community. **Methods:** Qualitative research methods were used to investigate faculty (n = 10) perceptions of the use of iPads in their instruction. Participants represented business, education, arts, humanities and social sciences, health professions, pharmacy, and academic technology. Two surveys were completed, and the first survey gathered demographics and teaching responsibilities. The second pre/post survey “Faculty Attitudes toward Technology-Supported Learning (FATSLE)” gathered experiences, challenges, activities, and attitudes of iPad integration. Faculty completed weekly logs to document goals, strengths, and challenges with the iPad. Participants also attended monthly interdisciplinary meetings to discuss recent successes, tips, and challenges. Advantages of this methodology included detailed documentation of successes and challenges as well as a strong interdisciplinary sampling. Weaknesses included the small sample size at one university. **Results:** Faculty predominately integrated the iPad to provide feedback and to deliver content. Participants shared tips, successes, and challenges in monthly interdisciplinary meetings. These meetings provided interdisciplinary perspectives and helped establish a learning community of support for faculty, which was a strength of the initiative. Other perceived strengths of iPad integration included
ease of grading (25% of respondents), enhanced engagement of students (10.9%), and ability to provide audio and video feedback (10.2%). Challenges primarily focused on technical difficulties. Conclusions: The results of the FATSLE suggest an interdisciplinary learning community was a useful platform to help integrate iPads into courses as pedagogical tools. Technical support is necessary and the integration of participants from academic technology was a strength of the learning community. iPads were integrated into a variety of courses and were useful for grading and engaging students.

Nurturing Professional Growth and Cultural Awareness Among Student Pharmacists Through a Virtual International Event

Joseph P. Nathan, Long Island University, Sara Grossman, Long Island University, Michelle Shaoool, Long Island University, Batsheva Askarinam, Long Island University, Kirosal Saleh, Long Island University. Objective: To promote professional and cultural awareness through interaction with pharmacy students from another country. Methods: Faculty members at LIU Pharmacy in New York and the Hebrew University of Jerusalem (HUJ) in Israel developed a collaborative program for PharmD students from their respective schools. The program consisted of a 1-hour virtual session, structured to facilitate an active discussion between students from both schools who were preassigned into 5 breakout rooms. LIU Pharmacy students from 2 cultural clubs (Jewish Pharmaceutical Society and Middle Eastern Pharmacists Association) and a class cohort from HUJ participated in the program. Discussion topics included the academic degree program and the profession of pharmacy in each country. At the conclusion of the program, students were asked to indicate whether the program increased their understanding of the educational process and the profession of pharmacy in the other country. Students were also asked to indicate whether the program increased their level of comfort when interacting with individuals from other cultures and countries. Results: Forty-nine students (26 from LIU Pharmacy; 23 from HUJ) participated in the program, held in February 2022. Of the 46 (94%) respondents to the questionnaire, 45 (98%) “strongly agreed” or “agreed” that the session increased their understanding of the educational program as well as the profession of pharmacy in the other country. Forty-two (91%) respondents “strongly agreed” or “agreed” that the program increased their level of comfort when interacting with individuals from other cultures and countries. Conclusions: The program contributed to students’ professional growth by promoting cultural awareness and understanding. Similar programs can be developed with other foreign schools of pharmacy.

Student-Reported Competency using ACPE Standard #4 Elements to Assess a Professional Development Series

Holly Gurgle, University of Utah, Don Blumenthal, University of Utah, Craig Henchey, University of Utah, Elizabeth Bald, University of Utah Health, Jennifer Babin, University of Utah, Casey Tak, University of Utah, Mark A. Munger, The University of Utah. Objective: To assess a Professional Development Seminar (PDS) course series using year-end survey student-reported competencies of Accrediting Council of Pharmacy Education (ACPE) Standard #4: Personal and Professional Development. Methods: The PDS pedagogical effect was determined by comparing year-end P3 and P4 student-responses to ACPE Standard #4 element questions from a baseline period without PDS to a year with PDS. PDS provides faculty-mentored individual student development with student-reflection based on ACPE Standard #4 elements activities. Descriptive statistics characterized the demographics of the sample and analysis of variance to compare responses across years. Significance was set at p< 0.05. Data were analyzed in SAS v9.4 (SAS Institute, Cary, NC). Results: Survey response rate was 77.0±8.5 over 5 years. The baseline population was 47 P3 and 40 P4 students vs. 59 P3 and 41 P4 students, respectively, for the PDS group. The average age of the population at admission was (μ±SD) 25.4±4.5, 46.5% were female, and 75.2% had prior degrees. Standard #4 elements of Self-Awareness (P3: +2.4-5.0%; P4: +2.4-5.1%), Leadership (P3: +0.03-5.3%; P4: +11.7-13.2%), Innovation and Entrepreneurship (P3: +3.9-10.6%; P4: +5.1-10.2%) and Professionalism (P3: -0.01-4.7%; P4: +3.7-6.1%) showed positive improvement with the introduction of PDS. Although, only Leadership showed a statistically significant change for both P3 and P4 years, there was a statistically significant trend in Innovation and Entrepreneurship (P3: p=0.09; P4: p< 0.053). Conclusions: The results of student-reported competencies of ACPE Standard #4 elements show that Leadership is the most significantly personal and professional development element by implementation of a PDS course series; other elements require further understanding and refinement.

Supporting the Pipeline: Implementation of a Longitudinal Pre-Pharmacy Academic and Professional Development Tool

Lily Oram, Drake University College of Pharmacy and Health Sciences, Sydni Jennings, Drake University College of Pharmacy and Health Sc, Michael H. Nelson, Drake University. Objective: This study determined the perceptions of pre-pharmacy students about their...
experience completing a longitudinal academic and professional development tool implemented across their pre-pharmacy experience. **Methods:** Pre-pharmacy students at Drake are enrolled in CAPS (Career, Academic, and Professional Success) each semester of the two year pre-professional program. The CAPS Pre-Professional Profile assignment was implemented in 2021-2022. This portfolio-like assignment spans four sequential pre-pharmacy courses and includes a cover sheet with statements such as an elevator pitch, an academic planning resource to track performance relative to admission criteria, a LASSI score report with steps for improvement, a reflective on Drake’s transferable skills (True Blue Skills), and a resource to guide each semester’s completion of the profile. Students completed a standard course evaluation survey that included qualitative and quantitative questions specific to the Pre-Professional Profile assignment. Quantitative questions were answered using a Likert scale of 1 (not valuable/likely) to 4 (very valuable/likely). **Results:** 95% of first-year (n=61) and 40% of second-year (n=16) students completed the evaluation survey. Of these, 69% and 75% of first-year and second-year students, respectively, indicated the Pre-Professional Profile was valuable; 54% and 31% of first-year and second-year students, respectively, indicated they were likely to continue to use their profile for purposes beyond the course. Positive comments about the experience of completing the Pre-Professional Profile were themed towards appreciating the utility of the assignment for tracking academic and professional progress while negative comments trended towards finding the exercise to be unnecessary (busy) work. **Conclusions:** Pilot data from the first semester of implementation indicates most students found value in this assignment due to appreciating the long-term benefit of collating and organizing personal data related to academic and professional growth.

**Drug Information and Library Science**

**Broadcasting Live! Assessing Pharmacy Students’ Research Skills Through a Recording of a Medline Search Assignment**

Hilary M. Jasmin, *The University of Tennessee Health Science Center*, James Wheeler, *The University of Tennessee Health Science Center College of Pharmacy*. **Objective:** Student pharmacists often struggle with implementing evidenced-based medicine (EBM) principles, including formulating clinical questions, and retrieving relevant information. The objective of this assignment was to assess student pharmacists’ competency in conducting a Medline literature search during a first-year course in a Doctor of Pharmacy course focused on drug information, medication safety, and technology. **Methods:** After three introductory lectures from their pharmacy liaison librarian, students were assigned a drug information question to be researched over a recorded Zoom session. While sharing their screen, students navigated to PubMed, developed a search string built upon the PICO search strategy (Population, Intervention, Comparison, Outcome), and utilized appropriate Boolean operators and publication date filters. The resulting literature retrieved was used in a larger drug information project they completed in groups. Two faculty members (one pharmacist, one librarian) evaluated the screen cast recordings. The recording and search strategy were assessed via a 50-point rubric. **Results:** Students displayed competency in completing a stepwise, detailed, and repeatable literature search. Students clearly articulated the steps of their searches and yielded relevant results. The mean literature search screen cast score was 98.6%. **Conclusions:** This assignment created a stronger opportunity for students to not only be taught information retrieval didactically, but to apply and model the skills displayed by the librarian.

**Episode 1: How to Use Podcasts to Engage Students with Journal Clubs**

Jason W. Guy, *University of Findlay*. **Objective:** Hypothesis: Utilization of a podcast journal club activity will have a positive impact on measured student outcomes. 1. To assess student outcomes (perceived engagement and understanding) and preferences regarding a podcast format for journal club presentations. 2. To identify strengths and challenges associated with a podcast journal club format. **Methods:** Students in a cardiovascular pharmacy course were asked to create a podcast that focused on a 10-15 minute verbal evaluation and discussion of a clinical research article assigned by the instructor. A post survey tool (n=39) was used to evaluate student outcomes (perceived engagement and understanding) using a 5 point Likert scale (strongly agree to strongly disagree) and open-ended responses. Descriptive statistics were used to analyze the results of the survey. The asynchronous delivery of the podcast provided 4 additional hours of contact time for the cardiovascular course to focus on other related topics and allowed for remote delivery during COVID-19. **Results:** Overall perceptions of the podcast were positive. Most students (72%) agreed or strongly agreed that the podcast format was engaging or fun. Additionally, 67% of students agreed or strongly agreed that the podcast format helped increase their understanding of content. A total of 72% of students agreed or strongly agreed that the podcast
format enhanced their learning experience. Strengths mentioned by students included providing an outlet for creativity and being more engaging than traditional journal clubs. Technical challenges with creating an audio file was the biggest limitation. **Conclusions:** This work is significant, because it provides an innovative approach to journal club activities that demonstrated strong student engagement. The asynchronous deliver also offers opportunities to re-envision delivery methods for journal club activities in the future.

**Gauging Pharmacy Students’ Interest in an Elective Course in Medical Writing**

Tina Zerilli, *Long Island University*, Linda Banbahji, *Long Island University*, Andreas Kavellaris, *Long Island University*, Kelly Ng, *Long Island University*, Sara Grossman, *Long Island University*, Joseph P. Nathan, *Long Island University*. **Objective:** Pharmacy schools must stay abreast of evolving trends in practice and prepare students to succeed in a highly competitive employment landscape. In certain practice settings, excellent medical writing skills are paramount for achieving such success. We sought to assess students’ interest in taking a proposed elective course in medical writing. **Methods:** An electronic survey was administered to second (P2), third (P3), and fourth (P4) professional year students at LIU in February 2022. The survey included questions regarding students’ prior experience with medical writing, short- and long-term career goals, interest in taking an elective medical writing course, and interest in suggested course topics. Two reminder emails were sent. Data were analyzed using descriptive statistics. **Results:** Of the 594 students surveyed, 138 (23%) responded (33 [24%] P2; 66 [48%] P3; 39 [28%] P4). Most (75 [54%]) lacked another academic degree and most (89 [64%]) lacked experience in medical writing. Fifty-seven (41%) planned to pursue postgraduate training. Of 135 respondents, 14 (10%) reported no interest in taking a medical writing course, 16 (12%) slight interest, 47 (35%) moderate interest, while 25 (19%) and 33 (24%) were very and extremely interested, respectively. Among 113 respondents, interest in such a course stemmed from a desire to enhance communication skills (85 [75%]), to succeed in post-graduate opportunities (62 [55%]), and to become an effective practitioner (59 [52%]). Overall, students expressed interest in learning about a variety of medical writing-related topics. **Conclusions:** The survey identified a cohort of students interested in medical writing sufficient to justify the development of a course dedicated to this topic. These data will be instrumental in the design of a medical writing elective course at LIU.

**Improving Pharmacy Student Communication Skills Through Deliberate Practice of a Simulated Drug Information Request**

Divya Desai, *Purdue University*, Amy H. Heck Sheehan, *Purdue University*, Jason B. Reed, *Purdue University*, Chelsea Baker, *Purdue University*. **Objective:** To assess changes in student pharmacist confidence and proficiency in verbal inter-professional communication, specifically though the incorporation of a feedback-oriented practice exercise prior to a graded simulated drug information request. **Methods:** A practice drug information request was administered to second-year students using the deliberate practice learning theory. Students received a drug information request via telephone and were given verbal feedback regarding their communication skills based on a standardized rubric. Students were instructed to reflect on the feedback given. The following week a similar assignment was administered, in which a formal grade was assigned. Following completion of these assignments, a retrospective pre-post survey consisting of 21 items was provided to the students. The survey was designed to collect student perceptions of confidence in their communication skills before and after the practice exercise, and the impact this exercise may have on future student success. Additionally, the student grades on the practice exercise and the graded assessment were compared. **Results:** Of the 140 students that were evaluated by both the practice and graded assignments, 136 responded to the survey (97%). There was a significant increase from baseline in respondents who agreed that they were confident in their ability to communicate with healthcare professionals after the practice exercise (43% to 91%), with 88% of students agreeing that they received valuable feedback regarding their communication skills. Grade averages from the practice exercise to the graded assessment increased from 83% to 92%, with 12% to 1% of students failing the assignment respectively. **Conclusions:** Implementation of a formative exercise with constructive feedback in practical instruction may serve as a valuable method for students to increase confidence and proficiency in communicating professionally.

**Experiential Education**

**A Matter of Trust: Pharmacy and Medical Students Assess Each Other on Entrustable Professional Activities**

Roxie L. Stewart, *The University of Louisiana at Monroe*, Ashley Barbo, *The University of Louisiana at Monroe*, Courtney Robertson, *The University of Louisiana at Monroe*, Elizabeth Young, *Louisiana State University Health Shreveport*. **Objective:** Medicine and pharmacy
have each developed EPAs that students should be able to perform without direct supervision upon graduation. Supervisors assign levels of trust (entrustment) when observing EPAs. Students in each discipline are also required to meet standards related to interprofessional education. Since trust is also integral in interprofessional collaboration, the question then arises if each of these student disciplines trust each other on selected EPAs, and to what degree. To our knowledge, this concept has not been approached and may complement EPA competency assessment. **Methods:** Third-year pharmacy students and fourth-year medical students collaborated in a transitions of care case. Both disciplines were assessed on attainment of selected IPEC sub-competencies using the Interprofessional Collaborative Competencies Attainment Survey retrospective pre-post tool. Post activity, pharmacy students were asked to evaluate medical students on selected medicine EPAs. Conversely, medical students were asked to evaluate pharmacy students on selected pharmacy EPAs. A 4-point entrustability scale was used (1 = I would not trust the student… 2 = I would trust if directly supervised; 3 = I would trust with limited direction; 4 = I would trust completely). **Results:** The averages of six pharmacy EPAs selected for assessment of pharmacy students by medical students ranged from 3.39 (analyzing information; establishing a care plan; monitoring) to 3.61 (collaborate as a member of the team). The averages of four medical EPAs selected for assessment of medical students by pharmacy students ranged from 3.58 (enter and discuss prescriptions) to 3.82 (collaborate as a member of the team). Student-reported abilities in all IPEC sub-competencies increased (retrospective pre/post). **Conclusions:** Peer assessment of EPAs provides additional data and could be used as a part of a program’s longitudinal EPA competency assessment.

**A Scorecard to Rate Curriculum Vitae Predictors of Pharmacy Residency Placement**

Katherine Arnes, University of Findlay, Timothy Burkart, University of Findlay, Julie H. Oestreich, University of Findlay. **Objective:** An important component of Experiential Education is preparation for career placement. Competitive pharmacy residency programs select students based on several factors, including the first impression of an applicant’s Curriculum Vitae (CV). Previous literature suggests that certain components of the CV may determine if the student earns consideration. This project aimed to develop a specific scorecard able to predict what experiences included on a CV increase the likelihood of obtaining a residency for pharmacy graduates. We hypothesized that an evidence-based scorecard to evaluate CVs would determine a student’s likelihood of obtaining residency placement. **Methods:** This quantitative retrospective study was approved by the IRB for Exempt Status and incorporated an iterative design of a new residency predictor scorecard and subsequent validation with multiple graduating classes. A single investigator analyzed individual CVs in the experiential office using point-based rankings. Then, scores were evaluated by nominal regression (SPSS, v25) to identify which attributes predicted a residency position. The optimized scorecard was applied to two additional cohorts of College of Pharmacy graduates. **Results:** Significant categories for the scorecard included Hospital Internship, Indicators of High GPA, Additional Research, and Overall Impression. Based on natural breakpoints in the data, we chose a score of 8 as a threshold for obtaining a residency. With this breakpoint, a score greater than or equal to 8 had an 86.8% probability of predicting if a student would obtain a residency (sensitivity). Likewise, those with a score under 8 had a 41.9% probability of not obtaining a residency (specificity). **Conclusions:** Coaching pharmacy students on optimized CV characteristics both during APPE experiences and earlier in training may assist students hoping to increase competitiveness for residency placement. *Encore presentation

**A Self-Discovery Process to Build an Effective Experiential Programs Team**

Craig D. Cox, Texas Tech University Health Sciences Center Jerry H. Hodge School of Pharmacy, Jean Haynes, Texas Tech University Health Sciences Center Jerry H. Hodge School of Pharmacy. **Objective:** Describe a process of experiential staff self-discovery that was incorporated into the biannual evaluation process to provide self-growth opportunities to help maximize team efficiency and effectiveness. **Methods:** Over the span of a 5-year period, experiential team members completed a comprehensive workload analysis of their daily job responsibilities and three self-assessments including Emotional Intelligence (EQ-i-2.0), StrengthsFinder 2.0, and True Colors. For each activity, staff attended an informative 2-hour session where they were provided strategies on how to use these findings to enhance their current job responsibilities. One on one meetings were then held with each individual staff member to determine the impact of this self-discovery process. From these sessions, a qualitative analysis was performed to identify major themes that could help inform future evolution of staff development. **Results:** Five experiential staff members completed the workload analysis and all three self-assessments. 100% of staff found the workload analysis difficult to complete citing the lack of clarity in the category descriptions. However, 90% said the process allowed
them the opportunity to better understand what their team members were doing. 100% of staff found value in the True Colors self-assessment, with only 60% and 40% finding value with the Strengths Finder and Emotional Intelligence assessments, respectively. 60% of staff reported making a change to their activities based on the results of one or more of the self-assessments. All staff agreed that that the self-assessment helped them to better understand themselves and how they are perceived by others, with True Colors being the most popular. Conclusions: Self-discovery assessments and workload analyses can provide opportunities for personal growth as long the purpose is clear and ongoing follow-up is provided to experiential staff members.

An Interprofessional Team Education Simulated Naloxone Training Experience for IPPE Hours

Lindsey E. Dayer, University of Arkansas for Medical Sciences, Elizabeth Riley, UAMS, Kimberly Stickley, UAMS, Amber Teigen, UAMS, Stephanie Trotter, UAMS, Michael Anders, University of Arkansas for Medical Sciences, Seth Heldenbrand, University of Arkansas for Medical Sciences. Objective: The objective of this project was to develop an interprofessional simulated naloxone training experience for introductory pharmacy practice experience hours. Methods: A two-hour interprofessional (IP) naloxone administration training session for students was developed. This was a simulated experience in which students worked in IP groups with a mannequin patient. Students were taught how to approach a patient with a suspected opioid overdose and had to work in their groups to treat the suspected opioid overdose. Students completed a pre- and post-knowledge test as well as rated their confidence level. Results: Thirty student pharmacists participated in the IP simulation. These students received three IPPE hours for participating and completing the experience. There was a total of nine groups and each group had at least 1 pharmacy student, 1 physician’s assistant, and 1 nursing student. Their knowledge scores increased from 60% to 85%. Their average confidence level increased from 3.19/5.00 to 4.82/5.00. Interprofessional teamwork competencies in communication, collaboration, roles/responsibilities, patient/family-centered approach, conflict resolution, and team functioning were increased from 3.83/5.00 pre-training to 4.76/5.00 after the training. Conclusions: This type of education experience advances collaboration among healthcare team members. It allows students to learn about, from, and with other members of the IP healthcare team. The IPPE simulation also falls within the 60 allowable simulated hours and is a unique education experience for student pharmacists. This high-risk, low-occurrence medical emergency may not be something that students would typically experience while doing an IPPE in the community or health-system setting.

Assessing Interprofessional Interactions during Operational Advanced Pharmacy Practice Experiences

Richard F. O’Brocta, University at Buffalo, The State University of New York, Nicole Paolini Albanese, University at Buffalo, The State University of New York. Objective: The objective of this study is to assess the extent of interprofessional (IP) interaction with prescribers that occurs during operational APPEs. It was hypothesized that most student pharmacists would interact with prescribers at least once/week during operational APPEs. Methods: For the class of 2021, APPE student pharmacists self-assessed the type and frequency of IP interactions with prescribers. Operational APPEs were defined as Community and Hospital/Health System (HHS) Pharmacy. A prescriber was defined as a physician, mid-level, or students of those disciplines. Aggregate data was sorted by type of prescriber and frequency (several times/day, several times/week, once/week, rarely, or never). Results: A total of 233 students, 116 Community and 117 HHS Pharmacy APPE, provided data on the type and frequency of IP interactions with prescribers. Student pharmacists reported interacting with prescribers several times/day, several times/week, once/week, rarely, and never 146/699 (21%), 225/699 (32%), 100/699 (14%), 91/699 (13%), and 137/699 (20%) respectively after completing their Community and HHS Pharmacy APPEs. The majority 471/699 (67%) of student pharmacists indicated interacting with prescribers once/week or more. Student pharmacists on Community APPE indicated interacting with physicians, mid-level practitioners, and student prescribers at least once/week 106/116 (91%), 106/116 (91%), and 45/116 (39%) respectively. Student pharmacists on HHS APPE indicated interacting with physicians, mid-level practitioners, and student prescribers at least once/week 79/117 (68%), 79/117 (68%), and 56/117 (48%) respectively. Conclusions: It appears that student pharmacists interact with prescribers while completing their operational APPEs. Most of their interaction with prescribers was with physicians, which is an accreditation standard. The school’s expectation is for student pharmacists to interact with any prescriber at least once/week, which this study has shown.

Correlation Between Student Success and Advanced Pharmacy Practice Experience Rubrics: A Blueprint for Quality Assurance

Hannah L. Bunn, Campbell University, Arefa Bachus, Campbell University, Lauren T. Harris, High Point
Pharmacy Practice Transformation APPE: Describing and Assessing a Required, Student-Led, Practice Transformation APPE

Kate Newman, Southern Illinois University Edwardsville, Tessa Keys, Southern Illinois University Edwardsville. Objective: There is a need within the profession of pharmacy to develop innovative thinking, problem-solving and entrepreneurship skills. A required, practice transformation APPE was developed as the final step in a longitudinal innovation curriculum where students demonstrate the integration of their knowledge and skills through addressing real-world pharmacy problems with mentor guidance. The goal of this study is to analyze and describe the work completed by students. Methods: Inductive thematic analysis of project abstracts from 2020-present was completed to describe topic, targeted population and approach of student projects. Reviewers met to discuss emerging themes and to reach consensus in coding. Additionally, innovation of final projects was assessed by two independent evaluators using a rubric to score utility and novelty of the project (4-point scale – none to excellent). Results: This study analyzed 185 student abstracts. While projects cover a wide range of topics, most common were substance use (9.8%), pain & palliative care, pulmonary, pharmacy operations and population health (6.8% each). Projects most commonly were intended to directly impact patients (52.6%). However, students (25%) and pharmacists (17.2%) were also common intended targets of interventions. Projects were approached most through surveys (34.6%) or retrospective reviews (30.8%). However, 12% of projects designed & implemented new interventions or services. Most projects scored good (36.3%) to excellent (60%) on their “benefit to future practice” (mean = 3.35). Novelty was similarly rated good (38%) to excellent (58%) (mean = 3.4). Conclusions: Through this required APPE, students can apply their skills to address real-world problems in a variety of settings. Projects directly and indirectly impact patient care (as indicated by target audience) and are relevant to current practice needs.

Development of a Comprehensive Evaluation Tool for International Experiential Sites

Lauren Blum, UNC Eshelman School of Pharmacy, Yousra Bouzaghar, UNC Eshelman School of Pharmacy, Caroline W. Sasser, UNC Eshelman School of Pharmacy, Stephen Eckel, UNC Eshelman School of Pharmacy. Objective: To develop a comprehensive evaluation tool for international experiential learning sites. Methods: A literature evaluation via several databases (PubMed, Global Health, Business Source Premier) and broad internet search was conducted using the search terms: International, Partnership, Evaluation, Tool. The search strategy was designed to identify existing tools institutions use to evaluate international partnerships and experiential learning sites as well as tools that are used to evaluate community partnerships. Both freely available tools and peer-reviewed articles relating to the topic were included. Results: The search strategy yielded 13 existing tools from which relevant factors were selected and organized into a comprehensive tool that can be used to evaluate new and existing international experiential learning sites. The
Diagnosing Professionalism in the Co-Curriculum: Using Rubrics to Assess PharmD Students’ Reflections

April G. Staton, Auburn University; Daniel Trujillo, Auburn University College of Pharmacy; Kabre Heck, Auburn University; Lynn Stevenson, Auburn University. Objective: The co-curriculum is essential to preparing practice-ready graduates but is sometimes overlooked in pharmacy education. To respond to this gap, we developed a rubric to assess a co-curricular assignment about professionalism (ACPE Standards 4 and 10). Methods: Includes collaborative rubric development and data analysis. Rubric domains (4) include writing conventions and submission, reflection and self-assessment, implementing success strategies, and connections to experience. A three-point Likert scale (1 = beginner, 2 = developing, and 3 = accomplished), with descriptions of expectations, was used to provide feedback to students. Data analysis consisted of descriptive statistics, correlations, and inter-rater reliability (IRR). Results: During the 2021-2022 academic year, the rubric provided feedback to 544 PharmD students about their professionalism assignments. There were 388 students (71%) who completed and submitted the rubric. Competency performance was similar for remote and onsite rotations, which may identify competencies that are better suited for a specific setting. The study aim is to identify competencies that may be better suited for each inpatient setting to enhance future student learning experiences. Conclusions: The rubric facilitated a successful delivery of student feedback about professionalism in the co-curriculum. Results indicate students need more instruction related to implementing success strategies and connecting their writing to professional experiences. IRR ratings show a need for improvement in the consistency of faculty grading.

Entry-level Competencies Needed for Inpatient Practice: Comparing Remote and Onsite Rotation Experiences

Jennifer Prisco, MCPHS University; Boston, Adrian Wong, MCPHS University, Oussayma Moukhachen, MCPHS University - Boston, Philip Grgrurich, MCPHS University - Boston, Snehal Bhatt, MCPHS University - Boston, Trisha LaPointe, MCPHS University - Boston, Yulia Murray, MCPHS University - Boston. Objective: Due to the COVID-19 pandemic, remote completion of some inpatient Advanced Pharmacy Practice Experiences (APPEs) was necessary. Limited data exist comparing onsite to remote rotations, which may identify competencies that are better suited for a specific setting. The study aims to identify competencies that may be better suited for each inpatient setting to enhance future student’s learning experiences. Methods: Class of 2020 pharmacy students who completed one remote APPE inpatient rotation also completed a subsequent associated survey. Four cohort groups were compared: Remote institutional/health system (RIH), Remote general medicine (RGM), Onsite institutional/health system (OIH), and Onsite general medicine (OGM). The survey focused on the four entry-level performance competencies (Hospital Pharmacy Systems, Medication Safety and Quality, Clinical Applications, and Professional Practice) and 26 subcategories identified within 2016 Accreditation Council for Pharmacy Education Guidance Document, Appendix C. Quantitative statistical analysis was performed to identify differences in competency attainment by rotation type. Results: A total of 286 students completed the survey (RIH, n=54; RGM, n=64; OIH, n=86; OGM, n=82). Competency performance was similar for remote and onsite settings in all categories. Competency performance was similar for 80.8% of subcategories and 53.8% of subcategories in the remote versus onsite institutional and general medicine settings, respectively. All remaining subcategories were better completed through onsite rotations (p<0.05). Conclusions: To accomplish best practices for entry-level inpatient competencies, both rotation types should have onsite requirements. Institutional APPEs appear more amenable to remote competency integration. This data supported future APPE format changes for continuous quality improvement while managing COVID-19 impacts on clinical sites. While preceptors involved in remote settings attested to the students’
Examining Remote Versus Onsite Competency Activities for Community and Ambulatory Advanced Pharmacy Practice Experiences (APPEs)

Jennifer Prisco, MCPHS University - Boston, Matthew Machado, MCPHS University - Boston, Phung On, MCPHS University - Boston, Timothy Hudd, MCPHS University - Boston, Jennifer Goldman, MCPHS University - Boston. Objective: Remote Advanced Pharmacy Practice Experiences (APPEs) increased due to COVID-19. Limited data exists to compare onsite and remote outpatient competency achievement. The aim is to identify outpatient competencies that may be adaptable for onsite or remote APPE ambulatory care (AMB) and community settings. Methods: Class of 2020 Doctor of Pharmacy students completed one remote APPE. Using a Qualtrics® survey grounded in 2016 Accreditation Council for Pharmacy Education Guidance Document Appendix B that has 7 performance competencies and 84 subcategories, students reported experiences for outpatient APPEs. Four cohort groups were compared: remote community, remote AMB, onsite community, and onsite AMB. Quantitative statistical analysis was performed to identify differences in competency attainment by rotation type. Results: AMB remote (n=63), community remote (n=50), AMB onsite (n=69), and community onsite (n=92) were compared. Onsite community rotations allow for more activities to be integrated for all subcategories related to Dispensing Systems Management, Business Management, Leadership Abilities, and Legal Consideration compared to remote community (p< 0.05 for all). Minimal subcategories (1.2%) for remote community were completed more often when compared to in-person (p=0.007), and 16.7% of subcategories were not statistically different for either setting (p>0.05). For AMB, none of the seven categories significantly favored a specific setting when examining all subcategories. No subcategories occurred significantly more in the remote setting, although 56% of subcategories were not statistically different for either setting (p>0.05). Conclusions: To accomplish best practices, encourage onsite community APPEs. AMB appears more amendable to remote integration. This data can be utilized in future APPE format changes for continuous quality improvement during the pandemic, natural disaster or other. Strengths include preceptor attestation to student reporting, while a limitation includes potential student recall bias.

Experiential Reflection: Review of Preceptor and Site Financial Support during Advanced Pharmacy Practice Experiences

Tonya Dauterman, University of Findlay, Timothy Burkart, University of Findlay, Lori Colchagoff, University of Findlay, Pam Cochran, University of Findlay. Objective: The objective is to reflect on 10 years of support to advanced pharmacy practice preceptor resources necessary to support student learning. Resources are categorized as drug information, technology, professional development, continuing education, or other. Methods: University of Findlay students are placed in a unique advanced pharmacy practice experience model, whereby students are assigned to a “hub site” through which they may complete all required and most elective rotations. Each site has a designated clinical faculty coordinator. These sites are contracted annually to provide a majority of the student’s core rotations. In each contract, a defined minimum amount of dollars is carved out of the site’s total payment. Sites must request approval from the college prior to the release of any carve-out funds for the purpose of site development for student learning (computers, books, etc.) and/or preceptor training and certification. The program was implemented in 2010. Results: From July 2010 through May of 2021 over four hundred fifty requests from 25 sites have been funded through carve out dollars. On average 40 quests are made each year. Total dollars spent toward the resource fund varies from year to year ranging from $76,760.00 to $124,173.14, supporting the student learning sites and preceptor development. Requests were made in the areas of drug information, technology, professional development, continuing education, or other. Conclusions: This review shows that the college continues to be able to support these vital hub sites in a meaningful and substantial way with funding to assist with improvements in technology, availability of drug information resources, and continued preceptor education and development. This initiative has proven to be vital for supporting student success, preceptor and site relationships, and meeting ACPE requirements.

Exploring Pharmacy’s Interprofessional Clinical Learning Environment

Rebecca Moote, The University of Texas at Austin and University Hospital, Temple Ratcliffe, University of Texas Health Science Center at San Antonio Long School of Medicine, Christine Gaspard, UT Health San Antonio, Angela Kennedy, UT Health San Antonio School of Health Professions, Speech Language Pathology Program, Elena Riccio Leach, UT Health San Antonio School
of Dentistry, Comprehensive Dentistry Department, Marta Vives, UT Health San Antonio School of Nursing, Joseph Zorek, Office of the Vice President for Academic, Faculty, and Student Affairs, UT Health San Antonio. **Objective:** Interprofessional education (IPE) initiatives must move meaningfully into clinical learning environments to effectively prepare pharmacy learners for future practice. An interprofessional team of faculty at the University of Texas Health Science Center at San Antonio conducted a scoping review of contemporary clinical IPE to inform meaningful practices, then performed a sub-analysis aimed at identifying opportunities and implications for pharmacy education. **Methods:** We searched PubMed, SCOPUS, and CINAHL databases for articles published since 2015 describing clinical IPE. Inclusion/exclusion criteria of two or more professions, two or more groups of learners, and patient involvement were applied. Key data extraction points included professions involved, practice settings, and educational outcomes measured. **Results:** Our search yielded 1610 potential publications for inclusion. After title/abstract and full text review, 83 articles were included for extraction. Forty-two percent (35/83) of articles were included in our sub-analysis as they involved pharmacy learners. The majority (74%) were conducted in North America. Medical (72%), nursing (47%), occupational therapy (25%) and physical therapy (25%) learners were the most prevalent interprofessional partners. The median number of professions participating in clinical IPE activities was 4, with a range of 2-8. The most common practice site was ambulatory care (49%), followed by inpatient/acute care (26%). Only 13 studies (37%) evaluated IPEC core competencies, and 40% employed validated IPE measurement instruments; the most common being SPICE-R and RIPLS. Most learning outcomes targeted modification of attitudes/perceptions. **Conclusions:** Clinical IPE involving pharmacy learners most often involves partners in medicine and nursing, takes place in ambulatory care, and assesses lower-level learning outcomes. Opportunities exist to develop robust clinical IPE in inpatient settings focused on higher-order IPEC core competencies and learning outcomes like skill acquisition and behavior change.

**Extending the Curricular Course Review Process to Introductory and Advanced Pharmacy Practice Experiences**

Angela M. Brownfield, *University of Missouri-Kansas City*, Erica Otis, *University of Missouri-Kansas City*, Valerie Ruehter, *University of Missouri-Kansas City*. **Objective:** To describe the application of a didactic course review process to experiential education. **Methods:** The didactic course review process at UMKC School of Pharmacy began in 2014 and was extended to experiential education in 2016. All introductory and required advanced experiences are included. Each course is reviewed by a curriculum committee member and an intra-divisional faculty reviewer on a four-year cycle. The criterion for review includes four domains: integration and equivalence, contemporariness and balance, application and transformation, and achievement and readiness. Courses are scored on a scale from “5” (commendable) to “0” (extensive work needed) with comments provided for each domain. Course review reports are discussed among the curriculum committee to determine a final score. Course coordinators respond to each suggestion for improvement with “Will Assess”, “Will Implement”, or “Decline”. The review process is aligned with annual stakeholder survey data. Sequencing experiential courses initially focused on new courses or those with recent modifications. **Results:** To date, nine experiential courses have been reviewed over two cycles: six in cycle one and three in cycle two. The mean score for introductory experiences was 3.1 while mean score for advanced was 2.6. Course modifications were made most often in relation to assessment, competencies/objectives, and learning strategies. Additional categories meriting continued course monitoring focused on alignment, rigor of content, and overall quality assessment. **Conclusions:** Experiential course review is a time-consuming process that has been successful in identifying areas for improvement to ensure achievement of educational outcomes and continuous quality improvement. It is generalizable to other Schools for ongoing programmatic assessment and achievement of compliance with Accreditation Council for Pharmacy Education Standards 10.11 and 10.15.

**Fungus Among Us: Evaluation of a Game-Based Skills Review Activity in a Pharmacy Laboratory Course**

Ashley Barbo, *The University of Louisiana at Monroe*, Brandee Wright, *ULM*. **Objective:** Literature shows that educational games can help complement and reinforce taught material by promoting students’ participation and engagement. The objectives of this study were to assess student perceptions of Fungus Among Us, to determine the effect of gamification on engagement and teamwork, and to collect data for programmatic improvement. **Methods:** Fungus Among Us, a game-based skills review activity, is a novel live-action game inspired by the online game Among Us®. It was developed to provide second-year pharmacy students an opportunity to review institutional pharmacy skills in preparation for their Institutional
Introductory Pharmacy Practice Experiences (IPPEs). Students completed the activity as a required component of the Pharmacy Practice Integrated Laboratory Sequence. Optional pre- and post-surveys were offered to students for data collection. **Results:** One hundred percent of respondents agreed that they would like to do more activities like this in the future and that Fungus Among Us was an effective review of material previously covered. Student pre- and post-engagement levels were analyzed based on Schlechty’s levels of engagement. Results were categorized into authentically engaged or not authentically engaged. Using a chi-square test, this data yielded a p-value of .005 (x²(1,128) = 7.87), which showed a significant (p < 0.05) increase in engagement for the game activity in comparison to non-game lab activities. Ninety-eight percent of respondents agreed that working as a team helped them to understand and apply the material covered. **Conclusions:** Students were more likely to report being authentically engaged in the game lab as compared to non-game labs. Positive perceptions of this activity demonstrate the usefulness of educational games in the laboratory curriculum. This activity can be adapted and utilized in a variety of educational settings.

**Impact of Course Delivery Modality on Student Perceptions of a Population-Health Introductory Pharmacy Practice Experience**


**Objective:** To evaluate course delivery modality impact on self-reported student knowledge and comfort with patient care in a required, population health-based introductory pharmacy practice experience (IPPE) conducted through remote access to a VA Medical Center. **Methods:** Second-year students participated in an IPPE delivered using three modalities between 2019 to 2021: in-person (IP), remote (R), and hybrid (H). Students completed a 17-item Likert-type survey (scale 1 to 4) assessing comfort with patient care activities and knowledge of population health, pre- and post-IPPE. Survey responses were compared utilizing repeated measures mixed ANOVA and post hoc Bonferroni analysis. **Results:** 111, 108, and 138 students completed the course in the IP, R, and H models, respectively. Mean change in scores significantly improved for all questions regardless of delivery method (p < 0.05). Hybrid delivery significantly impacted mean change in score for navigating an EHR, H vs. IP (0.58 vs. 0.15; p < 0.001), H vs. R (0.58 vs. 0.33; p = 0.049) and utilizing an EHR to gather patient information, H vs. IP (0.54 vs. 0.30; p = 0.001), H vs. R (0.54 vs. 0.32; p = 0.038). Remote delivery impacted mean change in score for student perceived understanding of the importance of quality measures in healthcare, IP vs. R (0.26 vs. 0.52; p = 0.037). H vs. R and H vs. IP were not significant (p > 0.05). **Conclusions:** Self-reported knowledge and comfort increased for all items surveyed regardless of delivery modality. The limited number of survey items impacted by modality suggests modifying course delivery does not compromise student learning and, in some instances, remote or hybrid models may be linked to an improvement in perceived learning. Preceptors can use this data to reduce variability from delivery modality during future IPPE offerings.

**Implementation of an Experiential Rural Health Leadership Initiative to Expand Collaboration, Entrepreneurship, and Leadership**


**Objective:** To evaluate the impacts of the Pharmacy Advancement In Rural Experiential Development to Expand Collaboration, Entrepreneurship, and Leadership—“PAIRED to ExCEL” (PtoE) program. PtoE was implemented to equip pharmacy students to approach rural experiential learning and a rural career path innovatively and with an entrepreneurial mindset. **Methods:** PtoE students completed baseline assessments, including the Student Leadership Practices Inventory® (SLPI) and a baseline rural health survey. They subsequently completed a Rural Health Academy including leadership training during the P3 year, and during the P4 year, identified a rural healthcare leader mentor, implemented a Rural Healthcare Action Plan (RHAP) project, participated in Rural Leadership Advisory Council meetings, completed rural APPE rotations, and developed a Rural Healthcare Business Plan. Students also completed an interim Student Leadership Self-Assessment (SLSA). **Results:** Baseline rural health survey data indicated that 55.2% of PtoE students Strongly Agreed or Agreed regarding their plans for rural community practice following graduation. Two-thirds of participants Strongly Agreed concerning their interest in rural practice. Baseline SLPI data indicated that students rated themselves highest in the “Enable Others to Act” and “Model the Way” leadership domains, with mean scores of 25.3 and 22.9 (out of 30), respectively. At the PtoE mid-point, 4 RHAPs were complete and 2 others were in-progress. Interim SLSA data indicated that all students increased behaviors in at least one SLPI domain. **Conclusions:** A rural healthcare leadership initiative was successfully implemented.
through the avenue of experiential education and resulted in community rural health improvement projects and increased student leadership behaviors. Future study directions include evaluation of post-program perceptions regarding rural healthcare and careers, numeric changes in SLPI parameters from baseline, and outcomes of RHAP projects.

Implementing a Series of Advanced Pharmacy Practice Experience Preparatory Topics into a Skills Lab Curriculum

Janel P. Soucie, University of Florida, James Taylor, University of Florida, Chardae Whitten, University of Florida, Jessica Huston, University of Florida. Objective: To determine if there is a perceived benefit from the incorporation of a longitudinal series of topics focused on Advanced Pharmacy Practice Experience (APPE) preparedness into a skills lab curriculum. Given the proximity of third-year students to APPE rotations, addressing common misconceptions or areas of difficulty encountered on APPEs may improve student perception of APPE preparedness and relevance of lab material as it relates to experiential practice. Methods: Experiential and skills lab faculty collaborated to generate advice for students related to APPE rotations. The advice was developed into short topics which were paired with and incorporated into the third-year Professional Practice Skills Lab content for the Fall 2021 semester. Topics were presented at the beginning of most lab sessions with impromptu faculty and facilitator contributions integrated at the time of delivery. Results: One hundred twenty-seven members (54%) of the student cohort consented to complete a follow-up survey and provided feedback on the series. For all ranked statements most students agreed or strongly agreed with the elements evaluated, demonstrating overall positive feedback. Feedback from free-text response questions indicated that many students found all topics presented to be beneficial, and topics of interest for the upcoming semester included advice regarding residencies/fellowships/employment, wellness, and communication with preceptors. Conclusions: Student feedback indicates an overall perception of benefit and value from respondents. Future study may include perceived benefit from the students after they have completed their initial APPE rotation(s).

Interprofessional (IPE) Activities and Interactions – A Comparison of Didactic Curriculum and Rotation Experiences

Erin L. Johanson, Roseman University of Health Sciences, Michelle Hon, Roseman University of Health Sciences, Angela Chu, Roseman University of Health Sciences, Trang (Susan) Nguyen, Roseman University of Health Sciences, Emily Christiansen, Roseman University of Health Sciences, College of Pharmacy, Kristheana Rico, Roseman University of Health Sciences, College of Pharmacy. Objective: The purpose of this study was to compare the types and modes of IPE experiences between didactic IPE curriculum with APPE rotations. Methods: Investigators identified 13 real-world interprofessional activities and modes of communication and integrated them as new IPE questions into APPE final evaluations. Students in adult acute care, ambulatory care, advanced community and institutional practice APPEs marked whether or not they completed IPE activities on rotations. IPE Directors reviewed the didactic curriculum and identified the frequency at which students practiced those same interprofessional activities and modes of communication. Descriptive data analysis was reported. Results: Three-hundred and three APPE evaluations were completed over 18 weeks. Major discrepancies were in ambulatory care and advanced community practice. In ambulatory care, students provided educational presentations to other members of the healthcare team 77% of the time and provided consultations, such as answering drug information questions, 78.4% of the time. Neither activity was covered in the IPE didactic course. Ambulatory care students also documented patient encounters 83.8% of the time. Roseman’s South Jordan campus taught this activity in every IPE class while the Henderson campus did not. In advanced community practice, students provided consultations 83.9% of the time. This activity was not covered in the IPE course. Advanced community students utilized telephone communication 88.7% of the time. However, this was practiced in the IPE course 25% of the time. Conclusions: Major discrepancies between the IPE didactic course and APPE rotations were identified with the most significant differences in ambulatory care and advanced community settings. This study demonstrates the opportunity to evaluate the didactic curriculum, so that it mirrors the interprofessional activities students will participate in while on rotations and in future practice.

Interprofessional Clinical Care Rounds: Pharmacy and Dental Student Review of Medication-Related Problems

Kimberly Sanders, University of North Carolina at Chapel Hill, Lirong Yang, UNC Eshelman School of Pharmacy. Objective: In training dental students, dental curricula does not always focus on pharmacotherapy for identification of medication use risks. This retrospective study assessed the impact of peer-to-peer interprofessional
clinical care discussion (IPCCD) rounds evaluating medication-related problems (MRPs) identified by pharmacy students and discussion topics covered with dental students. Methods: Third-year dental students submitted medically complex patient cases active in their care for pharmacy consultation for IPCCD during Spring 2019. Second-year pharmacy students on clinical immersion with their pharmacist preceptor reviewed the patient charts, identified MRPs, and documented interactions with the dental students. A dental MRP framework was adapted from the Pharmacy Quality Alliance medication therapy problems categories framework for evaluation. Analysis of the patient cases, MRPs, and clinical topics discussed are described. Results: Of the 76 submitted cases, patient demographics included mean age of 71 years (55.3% female) with an average of six medical conditions and 11 medications per patient. The most common medical conditions were hypertension (87%), hyperlipidemia (64%), and diabetes (45%). Based on the MRP framework, 256 MRPs were identified with medication dose discrepancies (17%) and potential adverse drug effects (ADEs) (19%) being most common. Of the 246 pharmacotherapy topics discussed, 66% included covering specific drug-drug interactions (DDIs). Older adult medication use topics included increased risk of falls, medication-induced hypoglycemia, and benzodiazepine appropriateness. Most common oral health ADEs discussed were xerostomia, gingival hyperplasia, and inhaler-related oral candidiasis. Conclusions: The IPCCD rounds involving dental and pharmacy students helped identify important MRPs including risks of ADEs and DDIs. It serves as an interprofessional education model that encourages peer-to-peer teaching and informs collaborative practice strategies in dentistry to be evaluated in future studies on interprofessional core competencies and patient outcomes.

Longitudinal Outcomes of a Rural Health Mentorship Initiative in Experiential Education

Whitney D. Maxwell, University of South Carolina College of Pharmacy, Caleb Wahdan, University of South Carolina College of Pharmacy, Jennifer L. Baker, University of South Carolina, Elizabeth W. Blake, University of South Carolina, Patricia H. Fabel, University of South Carolina. Objective: To evaluate student outcomes of the Pharmacy Advancement In Rural Experiential Development with the Palmetto Experiential Education Partnership—“PAIRED with PEEP” (PwP) program. PwP was developed to encourage student participation in a rural health career mentorship program while completing IPPE and APPE rotations in rural locations. Methods: A prospective cohort study was designed to evaluate the impact of PwP on student participants’ rural healthcare perception (RHP) outcomes longitudinally, across 2 separate cohorts of students. A retrospective pre-/post-survey tool utilizing a 5-point Likert scale was created, based on previously published survey tools, to compare the post-program RHPs to baseline. This survey design was selected, as it is associated with reduced response shift bias. The non-parametric Wilcoxon Sign test was used to assess for statistically significant changes in RHP from baseline, as the data were not normally distributed. Results: Compared to baseline, RHPs of barriers to health care access, delivery, and affordability improved between 24-34%, with a mean increase of 1.1 points (p<.001 for all 3 items). Similarly, RHPs of the unique health care needs, and chronic disease state management needs increased by 33 and 38% from baseline, respectively (p<.001 for both). Students also reported significant increases in understanding rural interdisciplinary team dynamics (41.3%) and challenges (47.5%), with a mean increase of 1.4 points (p<.001). The greatest areas of growth were in understanding the challenges faced by interprofessional teams as well as the opportunities present for pharmacy practice in rural areas (46% increase, p<.001). Conclusions: Participation of 2 cohorts of students in the PwP rural health career mentorship program was associated with statistically significant increases in RHP from baseline.

Meet Them Where They Are - A Preceptor Development Program Geared Towards Adult Learners

Carinda J. Feild, University of Florida, Stacy Miller, University of Florida. Objective: The objective of this study was to evaluate the change in preceptors’ perceptions of a preceptor development program that was revised and designed for adult learners. Methods: A concierge approach using adult learning strategies was adopted with the college offering a variety of programs and delivery methods to best suit preceptors’ learning needs and styles. In addition to existing discounted continuing education (CE) offerings, the college implemented free external CE to preceptors and increased the number of free internally developed programs. Preceptor feedback guided topic determination. The office of experiential programs (OEP) published an electronic newsletter for preceptors each semester. Concurrently, the college began holding a preceptor town hall series each semester. Sessions were repeated across multiple days and times. Materials were made available for those unable to attend. Likert scale scores from Accreditation Council for Pharmacy
Moving Online: An Interprofessional Telehealth Simulation Incorporating Standardized Patients and Physicians

Valerie Ruehler, University of Missouri-Kansas City, erica Ottis, University of Missouri-Kansas City, Maqual Graham, University of Missouri-Kansas City. **Objective:** To describe the implementation and outcomes of a single institution transitioning an in-person acute care interprofessional education (IPE) simulation to a telehealth simulation that includes standardized patients and physicians. **Methods:** Third year pharmacy students and fifth year medical students completed the telehealth simulation as a required component of the IPE curriculum. Zoom was utilized as the technology platform, and teams worked to assess a standardized patient (SP) presenting with an acute illness and develop a treatment plan. Student teams presented therapeutic recommendations to a sixth-year medical student serving a standardized, resident physician role. Teams were evaluated on clinical skills using a standardized checklist, and teamwork behaviors using the Jefferson Teamwork Observation Guide (JTOG). The checklist for clinical skill evaluation was divided into three components: management strategies and patient education evaluated by the resident physician, and gathering information evaluated by the SP. A cut score was established to determine if the team passed the clinical portion of the simulation. **Results:** A total of 99 unique teams completed the simulation. JTOG scores for all interprofessional (IP) teams averaged above 3.3 on a 4-point Likert scale. Six IP teams failed the clinical skills checklist and were provided detailed feedback. More than 90% of student teams and year six medical students agreed or strongly agreed that learning objectives were met for the simulation. **Conclusions:** The IP simulation transitioned easily from in-person to a telehealth platform. This innovation is generalizable, exposes learners to unique aspects of an IP telehealth visit, and allows institutions who are not geographically co-located to collaborate on IPE that includes direct patient care.

Pharmacists’ Perspectives on the Healthcare Barriers for Adults Patients with Autism Spectrum Disorder: APPE Project

Heba Eassa, University of Saint Joseph, Luis Manuel Lavoura, University of Saint Joseph, Noelle Bianculli, University of Saint Joseph, Charlotte Mann, University of Saint Joseph, Ola Ghoneim, Western New England University. **Objective:** There remains a considerable discrepancy between the number of individuals with Autism Spectrum Disorder (ASD) seeking medical care and the number of healthcare professionals willing/capable/trained to provide care to them. Lack of knowledge, skills and confidence to work with individuals with ASD can lead to reluctance and/or refusal to treat. Having healthcare providers that are competent in communicating with ASD patients is paramount. Pharmacists are in the frontline of patient counseling/care. Therefore, our objective is to identify their perspective on the patient-provider communication gap and possible interventions to minimize, taking in consideration the social skills and language/communication level of patients with ASD. **Methods:** An online questionnaire was developed by two pharmacy students on their APPE rotation, approved by our Institutional Review Board and all participants were kept anonymous, and de-identified. The questionnaire was distributed to healthcare providers at their practice in the Northeast United States. **Results:** 116 participants completed the questionnaire. 62.9% of them were pharmacists. About 27% of participants felt either uncomfortable or totally uncomfortable communicating with adult ASD patients, and 33.6% felt unprepared to provide quality care to ASD patients. The majority of providers did not receive any additional training and requested continuing education, additional training, and communication aids/tools to bridge the gap and improve their healthcare performance with ASD patients. **Conclusions:** There is a communication gap between ASD patients and their healthcare providers. There is an urgent need to provide better, meaningful ASD training and education programs for healthcare providers/pharmacists to bridge the gap. Our findings encourage us to expand on our project and offer a new communication aid in form of a mobile app to improve the overall healthcare experience for patients with ASD.

Pharmacy Students’ Interprofessional Experience and Performance in Advanced Pharmacy Practice Experience Rotations amid Covid-19 Pandemic

Ana Hincapie, University of Cincinnati, Marwan Alrasheed, University of Cincinnati, Abdulrahman
Alsuhibani, University of Cincinnati College of Pharmacy, Jill Boone, University of Cincinnati College of Pharmacy, Michael Doherty, University of Cincinnati.

Objective: To compare 4th-year pharmacy students’ interactions and interprofessional experience with other healthcare providers before and during COVID-19 pandemic in Advanced Pharmacy Practice Experiences (APPE). Methods: This was a descriptive retrospective observational study assessing P4 pharmacy students’ experiences during APPEs before and during COVID-19 pandemic. Electronic surveys composed of 21 questions were distributed to students by the end of each rotation to capture their experiences with the rotation. The surveys elicited experiences in two dimensions; students’ interactions and the teams’ effectiveness, using Likert repose options. We compared students’ answers between 2019-2020 and 2020-2021 APPE rotations using the Chi-Square and Wilcoxon Rank Sum tests. Results: There were 83 and 86 students for APPE 2019-2020 and 2020-2021, respectively. The response rate was 100%. During COVID-19, pharmacy students’ written communications with physicians and nurse practitioners in general medicine rotations increased from 3% to 13% (p=.012) and from 3% to 20% (p<.01) respectively, while engaging frequently decreased from 86% to 76% (p=.071) and from 28% to 23% (p=.474) respectively. Before COVID-19, 75% of students strongly agreed that their colleagues from other disciplines referred to them/the pharmacist often, while only 61% strongly agreed on this question during COVID-19 (p<.05). Same outcomes occurred in the medical-surgical and ambulatory care rotations with more written communications and less engaging with different healthcare providers. In ambulatory care rotation, fewer students during COVID-19 strongly agreed that they utilized other professionals in different disciplines for their expertise (75% vs. 59%, p<.05). Conclusions: During COVID-19, pharmacy students’ and healthcare providers’ interaction has shifted from engaging frequently to more written communications. Students were less satisfied with their interprofessional experience during COVID-19.

Preceptors’ Perceptions of an Entrustable Professional Activity-based Community Introductory Pharmacy Practice Experience Curricula

Lena McDowell, Auburn University, Johnathan Hamrick, Mercer University, James Fetterman, South University, Julie Wickman, Philadelphia College of Osteopathic Medicine, Kay Brooks, The University of Georgia.

Objective: To evaluate preceptors’ perceptions of a recently implemented entrustable professional activity (EPA)-based community Introductory Pharmacy Practice Experience (IPPE). Methods: The Southeastern Pharmacy Experiential Education Consortium (SPEEC), comprised of schools of pharmacy in Alabama and Georgia, utilized a modified Delphi process to incorporate EPAs into community IPPE curricula to mirror the consortium’s community advanced pharmacy practice experience (APPE) curricula. SPEEC created a preceptor development module to train preceptors on EPAs, supporting tasks, and the revised assessment tool. Community IPPE preceptors who had utilized the new syllabus and evaluation tool were surveyed after the implementation of the new curricula. The purpose of the survey was to collect preceptor feedback regarding the EPA task applicability, assessment tool, and preceptor development module. Results: Forty-four preceptors initiated the survey, and 50% completed the full survey. Greater than 87% agreed or strongly agreed that tasks for each domain were at an appropriate level for a student to complete by the end of the community IPPE. Ninety-two percent or more agreed or strongly agreed EPA-based tasks for each domain prepared a community IPPE student for the community APPE. Overall, preceptors agreed the assessment tool was easy to navigate and effective at evaluating students’ performance. Of the preceptors who indicated they viewed the recorded preceptor development module, 100% found it helpful to their understanding of the assessment tool. Conclusions: Preceptor involvement is valuable in the development and evaluation of a revised experiential curricula to assure IPPE expectations align with contemporary practice. Preceptors’ feedback supports the use of an EPA-based community IPPE curriculum to assess student performance and to prepare students for community APPEs. Preceptor development is helpful and should be used when implementing experiential education changes.

Preceptors’ Perceptions of Feasibility, Acceptability, and Usefulness of Student-Delivered Naloxone Services in Community Pharmacy

Lena McDowell, Auburn University, Rebecca Maxson, Auburn University, Lindsey Hohmann, Auburn University- Harrison College of Pharmacy.

Objective: To evaluate the feasibility, acceptability, and usefulness of the student-delivered naloxone services (SDNS) from the perspective of community pharmacist preceptors. Methods: A didactic-experiential model was developed to enhance first-year student pharmacist education surrounding naloxone services implementation. During the Community Introductory Pharmacy Practice Experiences (IPPE), students completed activities related to naloxone services, emphasizing concepts taught during the didactic...
Institutional EPA based IPPE assessment allows our students to complete 1320 IPPE hours classroom and skills lab experiences. Specifically, students completed a total of at least five naloxone activities with a minimum of one activity involving direct patient interaction. Community IPPE preceptors were invited to complete a 30-item survey regarding the feasibility, acceptability, and usefulness of SDNS, using a 5-point Likert-type scale (1 = strongly disagree, 5 = strongly agree) informed by Weiner et al (2017) and analyzed using descriptive statistics. Follow-up semi-structured telephone interviews focused on SDNS barriers/facilitators and were guided by Consolidated Framework for Implementation Research domains of inner and outer setting, analyzed using deductive rapid content analysis. Results: Of 64 preceptors, 14 completed surveys and eight were interviewed. Overall, preceptors found SDNS feasible (mean[SD]: 3.94[0.78]), acceptable (3.98[0.79]), and useful (3.98[0.79]) in their pharmacies. In terms of feasibility, access to the Prescription Drug Monitoring Program was rated highest (4.36[0.63]). For acceptability of SDNS, the most positive items included the value of SDNS to community pharmacists (4.57[0.65]) and growth of student pharmacists (4.57[0.51]). Finally, the most useful aspects of SDNS were identifying patients at risk for opioid misuse (4.38[0.77]) and counseling patients on using naloxone (4.38[0.87]). From interviews, most barriers/facilitators were related to the inner setting. Conclusions: Community preceptors found SDNS feasible, acceptable, and useful in their practice which can be used to build sustainable models for naloxone services delivery in community pharmacies.

Professional Identity Formation: Using an Institutional EPA based IPPE assessment

Michael J. Gonyeau, Northeastern University, Alexa A. Carlson, Northeastern University, Stephanie L. Sibicky, Northeastern University, Jenny Van Amburgh, Northeastern University, Adam B. Woolley, Northeastern University, Debra Copeland, Northeastern University. Objective: As the AACP Strategic Plan 2021-2024 emphasizes professional practice identity of future pharmacists, we evaluated our university’s embedded model of immersive co-operative education (co-op)/IPPE as a change agent in the development of professional identity formation (PIF) in pharmacy students. Our co-op/IPPE model’s tenets of preparation, activity and reflection allows our students to complete 1320 IPPE hours immersed in pharmacy practice settings. Methods: Retrospective analysis of our EPA based co-op/IPPE student self-assessments compared to preceptor evaluations. We categorized questions based on PIF tenets (thinking(T), feeling(F), acting(A)). Three assessment questions were coded as TFA, 9 as TA, and 4 as A, with 2 elements deemed unrelated to PIF. Summary statistics and observed trends were identified. Results: Seventy-eight (72%) students and 57 (53%) preceptors completed evaluations. Of 15 EPAs in an institutional practice setting, student alignment with preceptor evaluations was mixed. Students reported higher incidence of performing tasks related to TFA: professional development (88% vs. 70% p = 0.01), communication (79% vs. 61% p = 0.03) and self-awareness (88% vs. 60% p = 0.002). However, four TA coded questions revealed a statistically significant difference from students’ self-report of “does not meet (DNM)” compared to preceptor evaluations (EPAs: 4.1 (DNM 33% vs. 9% p = 0.008), 7.1 (DNM 40% vs. 11% p < 0.0008), 8.1 (DNM 21% vs. 4% p = 0.004), and 10.1 (DNM 50% vs. 16% p = 0.0001)). Conclusions: An immersive institutional co-op/IPPE experience appears to be a strong scaffold for students to develop their professional identity, particularly in the areas of thinking and acting. Our results align with previously published reports that students are more critical evaluators of themselves than their preceptors, which is an opportunity for further IPPE, curricular, and student emotional intelligence development.

Student Perceptions of Advance Pharmacy Practice Experience (APPE) Readiness: Comparison of Two Curricula

Lori B. Hornsby, Auburn University College of Pharmacy, Julaine Fowlin, Vanderbilt University, Lena McDowell, Auburn University, Lynn Stevenson, Auburn University, Daniel Trujillo, Auburn University College of Pharmacy. Objective: To compare student perceptions of Advanced Pharmacy Practice Experience (APPE) readiness between Auburn University Harrison College of Pharmacy’s former Legacy Curriculum (LC) and current Practice Ready Curriculum (PRC). Methods: Pre-APPE self-assessment survey results conducted prior to the first APPE offering were compared for the first PRC class (May-June 2020) to the last LC class (May-June 2019). The 25-item questionnaire asks students to rank their comfort level for APPE activities in four domains: mastery of content knowledge (7 questions), patient care provider (14 questions), interprofessional team skills (2 questions), and self-developer (2 questions) utilizing a four-point Likert scale ranging from 1 (not comfortable at all) to 4 (very comfortable). Ordinal data was converted to numbers and treated as interval data for statistical analysis. Composite scores were created by averaging ratings within each specific domain. Independent samples t-test was utilized to compare mean differences between groups with a
Bonferroni correction applied across all analyses due to multiple comparisons. **Results:** One hundred and twenty-eight students (93%) in the final class of the LC and 146 (97%) in the first class of the PRC completed the self-assessment. Mean scores for all four domains were higher for students trained within the PRC as compared to the LC; mean differences between groups: Information master, 0.20, p < 0.01; Patient care provider, 0.39, p < 0.001; Interprofessional team skills 0.51, p < 0.001; Self-developer 0.24, p < 0.01. Mean scores for 13 of the 25 individual questions were higher for students in the PRC as compared to the LC (p < 0.001). **Conclusions:** Student perceptions of APPE readiness regarding knowledge and skills related to information, patient care, and interprofessional team skills, increased after the implementation of the PRC.

**Student Pharmacists’ Perspectives on Health Equity Following a Co-curricular Activity**

Adriane N. Irwin, Oregon State University College of Pharmacy, Myrna Y. Munar, Oregon State University College of Pharmacy, Stacey Olstad, Oregon State University College of Pharmacy, Natalea Braden-Suchy, Oregon State University College of Pharmacy. **Objective:** To describe student learning from participation in an interprofessional health fair that provided free health services to the homeless population in the downtown area of a metropolitan city as part of co-curricular program requirements. **Methods:** Open-ended responses from a standardized post-activity reflection exercise were content analyzed for key themes. Data were analyzed with immersion-crystallization qualitative methods. **Results:** A total of 14 student reflections, equaling 84 question responses, were included with four themes emerging. First, students applied concepts related to the social determinants of health and identified barriers to accessing health services for underserved patient populations. Second, students reflected on how language and other elements of communication supported positive patient interactions. Third, students engaged in professional growth by reflecting on how specific observations and interactions resulted in feelings and behaviors toward underserved populations. Fourth, students reflected on the importance of trust and mutual respect within the patient-provider relationship. **Conclusions:** Public health outreach is a frequent component of co-curricular programs. Student reflections demonstrated how engagement in an activity focused on an underserved population increased understanding of the social determinants of health and health equity, as well as resulted in self-awareness and growth as future health care professionals. Future research should look at what type of learning occurs across a broader scope of service activities with the long-term goal of encouraging students to actively address health disparities.

**Supporting Diverse, Longitudinal, Advanced Pharmacy Practice Experiences to Maximize Student Professional Growth and Development**

Julie A. Testman, University of Charleston, Jane H. Condée, University of Charleston. **Objective:** To describe the process for supporting diverse, longitudinal, advanced pharmacy practice experiences that provide an opportunity to maximize student professional growth and development. **Methods:** One healthcare system approached the school to increase the presence and integration of students; an agreement was made to assign a minimum of five students annually. To facilitate student on-boarding and orientation, each student completes five rotations: acute care, institutional, clinical, management, and elective. An internal application process was developed by the Office of Experiential Education, including a rubric that scores applicants in the areas of grade point average, service, leadership, research, and letter of intent. Additionally, a letter of recommendation from the student’s academic advisor is required. Experiential education faculty review each applicant in a blinded manner; final selections are determined by average rubric scores. Students submit rotation preferences to the healthcare system coordinator and are pre-scheduled for the experiences by the school. **Results:** The opportunity began with the Class of 2016. Over eight years, a total of 71 students (average of 9 per year) applied and 48 (average of 6 per year) were selected. The total number of fourth year students in the classes of 2016 through 2023 is 447; therefore, approximately 15.9% of students have applied and 10.7% were selected. Excluding Class of 2023 selections (n = 5), 40 students (93%) have successfully completed the experiences. Three students were unable to complete all experiences due to unforeseen medical or personal issues. **Conclusions:** Number of student applications and selections have remained consistent. An internal application process has been helpful in selecting students who are competitive and prepared for intensive, longitudinal exposure to a healthcare system.

**Taking our IDEA from Simulation to Reality**

Gina M. Baugh, West Virginia University, Jenna Sizemore, West Virginia University School of Medicine, Katherine Smalley, Office of Interprofessional Education. **Objective:** (1) Describe an interprofessional clinical practice experience in the transitions of care clinic setting (2) Discuss the outcomes from a clinical interprofessional
Methods: Interprofessional faculty members from dentistry, medicine, nursing, occupational therapy, pharmacy, physical therapy, and physician assistant programs took part in an innovation challenge to create an interprofessional clinical practice activity from an existing simulation experience. Students from these disciplines had been participating in the InterDisciplinary Education Apartment Simulation (IDEAS) to learn about providing home care for a patient transitioning home from the acute care setting. In order to translate this educational experience into clinical practice to improve patient care, the faculty members created a clinical practice experience by collaborating with the Transitions of Care Clinic (TCC) at the university’s hospital. Interprofessional teams of students participate in IPE huddles to learn about telemedicine, review patient cases, and meet with patients in person or via telemedicine. Results: During the pilot year 2021-22, there have been five IPE huddles which included 17 students from 7 disciplines. Twelve patients have been discussed with interventions and patient education. All interventions included coordination of care, 90% of IPE huddles provided medication reconciliation and/or medication adjustment, and patient counseling included vaccinations, smoking cessation, continuous glucose monitoring, and fall precautions. Additional tracking will include ED utilization, readmission within 30 days of enrollment, medication obtainment, cost savings by gas mileage by using telemedicine, blood pressure, A1C, sub-specialty clinician enrollment, and need for additional services. Conclusions: The Transitions of Care Clinic is an ideal setting for collaborative practice to expand on interprofessional education simulation experiences. Students can utilize skills learned in an educational setting to provide patient care and improve clinical outcomes.

The Role of a Cooperative Education (Co-Op) IPPE Program on Student Confidence During Interprofessional Collaboration

Adam B. Woolley, Northeastern University, Alexa A. Carlson, Northeastern University, Stephanie L. Sibicky, Northeastern University, Debra Copeland, Northeastern University, Michael J. Gonyeau, Northeastern University. Objective: Longitudinally evaluate the role of our University’s embedded model of immersive cooperative education (co-op)/IPPE program in fostering student clinical development and interprofessional (IP) collaboration. Secondary objectives include assessing student confidence in completing the Pharmacist’s Patient Care Process (PPCP). Methods: An anonymous online exit survey was developed for continuous quality improvement and administered to fourth professional year students in late Spring of their respective graduation year over three years. Students were asked about their co-op experiences as well as their confidence with independently performing the PPCP. Results: Completed surveys were submitted by 343 students (97.4% response rate) graduating between May 2019 through May 2021. During co-op, students reported actively participating and engaging as a healthcare team member (90.4% agreement), engaging in effective IP communication (88.7% agreement), and felt prepared to function as an effective member of an IP team (84.7% agreement). Students identified co-op as an opportunity to communicate with other members of the healthcare team (90% agreement) and were most likely to interact with physicians, nurse practitioners, nurses, and physician assistants. Communications occurred daily or several times per week (77%) and were often either face-to-face (32%) or via telephone or writing (37%). Students also reported participating in conflict resolution (17%) and education of other team members (14%). Upon graduation, students were confident in their abilities to independently establish (92.1%) and implement a patient care plan (91.4%) as part of the PPCP. Conclusions: Co-op provides students with the opportunity to function as a member of the healthcare team. The IP collaboration that occurs during co-op may help students gain the confidence and skills necessary to develop and implement a patient care plan independently and successfully.

Using Entrustable Professional Activities (EPAs) to Monitor Experiential Curricular Outcomes

Cheryl L. Clarke, Drake University, Eliza A. Dy-Boarman, Drake University, Nora Stelter, Drake University. Objective: 1) To examine the level of entrustability given by preceptors for defined entrustable professional activities (EPAs) for both hospital and community practice introductory pharmacy practice experiences (IPPEs) and advanced pharmacy practice experiences (APPEs). 2) To determine achievement of experiential curricular outcomes defined by increasing entrustability across the experiential curriculum and final APPE entrustability level. The hypothesis is entrustability increases over the course of the experiential curriculum. Methods: Expected EPAs were defined for all community and hospital practice IPPEs and APPEs. All APPE activities were expected to be completed at a participation level while IPPE activity levels were defined as observation; discussion; discussion and observation; and participation. After each experience, students documented the perceived level of entrustability given by their preceptor for each EPA using this scale: not applicable (0), observation (1), perform with direct supervision (2), perform with readily available supervision (3),
perform with distant supervision (4), and perform while supervising others (5). The entrustability levels for the Class of 2021 were reviewed across the experiential curriculum by EPA domain for both practice settings. **Results:** For hospital and community practice experiences, average entrustability scores progressively increased for each EPA domain. Average hospital practice APPE entrustability exceeded 3.0 for the domains of patient care provider, interprofessional team member, information master, and self-developer. Average community practice APPE entrustability exceeded 3.0 for all domains except population health promoter. **Conclusions:** Expected IPPE and APPE entrustability scores were met and entrustability progressively increased throughout the curriculum. This process paired with preceptor-submitted evaluations can be used to document experiential curricular goal achievement.

**Where is My Phone? Exploring Nomophobia in Doctor of Pharmacy Students Amid the COVID-19 Pandemic**

Eliza A. Dy-Boarman, Drake University, Lily Oram, Drake University College of Pharmacy and Health Sciences. **Objective:** Based on recent experiences at our institution, it was hypothesized that pharmacy student smartphone usage has increased since the start of the COVID-19 pandemic. Smartphone overuse impacts physical and mental health, academic performance, and patient care activities during experiential learning. The objective of this study was to assess nomophobia (i.e. “no mobile phone phobia”) and collect reflections on how the COVID-19 pandemic impacted smartphone usage in doctor of pharmacy students. **Methods:** All pharmacy students were invited to complete an electronic questionnaire, which included a nomophobia questionnaire (NMP-Q) to assess nomophobia severity and open-ended questions to assess: if/how the pandemic changed smartphone usage, if/how returning to in-person learning (classroom and/or experiential site) changed smartphone usage, and student-identified barriers to limiting smartphone usage. NMP-Q scores were analyzed using descriptive statistics, and open-ended responses were coded and analyzed for themes. **Results:** Of 293 total students, 174 consented to participate and completed at least a portion of the questionnaire; 149 (50.9%) students fully completed the NMP-Q. NMP-Q scores ranged from 36 to 140 (mean = 82.9, SD = 21.0), indicating that all participants demonstrated some level of nomophobia. The majority (68.7%) of student participants self-reported that smartphone usage increased as a result of the pandemic. Students reported barriers to decreasing or limiting their smartphone usage, including: current habits/routines, fear of missing important school and/or work information, needing to connect with distant family and friends, boredom/isolation, and lack of knowledge of downsides/motivation to change. **Conclusions:** The pandemic has increased smartphone usage in our student population. Data will be used to inform further intervention and support methods to address appropriate smartphone usage.

**You Know It When You See It - Characteristics of APPE Un-readiness**

Frank Yu, The University of Texas at Tyler, Stacy Reid, The University of Texas at Tyler, Winter Smith, The University of Texas at Tyler, Pamella Ochoa, The University of Texas at Tyler. **Objective:** Colleges of pharmacy continue to define Advanced Pharmacy Practice Experience (APPE) readiness. We evaluated the opposite – APPE un-readiness. The objective was to identify characteristics of students deemed “un-read” for APPEs. **Methods:** This study was a cross-sectional survey. Experiential education offices from 130 ACPE accredited U.S. colleges of pharmacy were asked to distribute a survey to their APPE preceptors from July-September 2021. Survey items were based on ACPE Standards 2016 Appendix A, pharmacy Entrustable Professional Activities (EPAs), current literature, and the authors’ experience. The authors defined un-readiness as, “pharmacy interns entering the APPE year who are not able to meaningfully engage in application-based patient care activities and require significant preceptor instruction on foundational competencies such as knowledge, skills, and/or professionalism.” The survey was pilot-tested prior to distribution. Likert-scale and multiple-choice question responses were summarized, and thematic analysis was used for open-ended items. **Results:** One hundred eighty-seven respondents reported precepting students who were un-ready for APPEs within the past five years. About 70% indicated students not ready for APPEs displayed adequate foundational knowledge 50% of the time or less. Similarly, 68% indicated these students displayed adequate skillsets 50% of the time or less. The most cited (>90%) areas of inadequate skills were critical thinking and clinical judgment/decision-making. Open-ended responses noted lack of interest/motivation, self-evaluation/self-awareness skills, confidence, and effort/engagement as other characteristics of these students. **Conclusions:** Students who are not ready for APPEs generally have deficiencies in baseline knowledge and critical thinking skills, as well as inadequate motivation, self-awareness, confidence, and engagement. APPE-readiness programs and assessments should consider these areas of focus.
Pharmaceutics

Approaches Used to Assess Course Interventions

Eytan A. Klausner, South College, Adam M. Persky, University of North Carolina at Chapel Hill. **Objective:** The objectives are to (1) describe the utility of approaches used for the assessment of course interventions in pharmacy education; and (2) provide recommendations that may guide faculty members in their future scholarship of teaching and learning (SoTL) efforts that encompass the assessment of course interventions. **Methods:** A literature search was conducted, primarily based on article titles, in the websites of the journals, American Journal of Pharmaceutical Education and Currents in Pharmacy Teaching and Learning. The search was limited in time from August 2016 to August 2021 to capture contemporary methodologies. **Results:** Thirty-four articles that included educational interventions were selected for analysis. Those articles used various approaches for the assessment of course interventions. In the order of decreasing frequency of use, those methods were surveys, student academic performance, student evaluations, mixed quantitative- and qualitative methods, pre- and post-test, and learning analytics. **Conclusions:** The use of more than one assessment approach, ie, triangulation, and multiple student cohorts, are advantageous. When multiple cohorts are used, it is beneficial to present the students’ demographic information. Student academic performance should be part of an assessment of course interventions whenever relevant. Surveys about student perceptions and confidence may contribute to the assessment of course interventions. However, since the information collected is subjective and is usually unrelated to student learning, such an approach should be coupled with other assessment approaches that reflect student learning, such as academic performance and/or a pre- and a post-test. Depending on the research question, qualitative methods and learning analytics may also be a part of the assessment of a course intervention.

Brain Targeting of Didanosine Through Intranasal Drug Delivery

Abeer M. Al-Ghananeem, Sullivan University College of Pharmacy and Health Sciences, Sarah Baltzley, Sullivan University College of Pharmacy and Health Sciences, Azzam Malkawi, University of Louisville College of Medicine. **Objective:** Didanosine (ddl) is a HIV reverse transcriptase inhibitor with low oral bioavailability and limited ability to target the central nervous system. The intranasal route of delivery has shown promise for improved central nervous system targeting, so didanosine was prepared as chitosan nanoparticles to enhance bioavailability and brain targeting. **Methods:** Didanosine was prepared as nanoparticles using ionotropic gelation of chitosan with TTP anions. Male Sprague-Dawley rats were divided into three groups and administered intranasal (in) ddl nanoparticles, in ddl solution, and intravenous (iv) ddl solution. Blood samples were collected at predetermined intervals, then cerebrospinal fluid (CSF) and brain and olfactory bulb samples were collected 180 minutes after dosing. Samples were then analyzed using UPLC LC/MS. **Results:** Absolute bioavailability of ddl nanoparticles was 70.9% ± 6.7 compared to 38.9% ± 16.7 for intranasal solution. Nasal administration of ddl loaded chitosan nanoparticles increased ddl concentration in brain tissue (199.07 ± 73.60 ng/mL) compared to nasal administration of ddl solution (96.50 ± 20.88 ng/mL). There was no significant difference between the intranasal solution and nanoparticles for central nervous system targeting (CSF/plasma ratio was 8.1 ± 2.6 and 8.9 ± 4.2), although it was significantly improved over iv ddl administration (p < 0.05). **Conclusions:** Intranasal administration of ddl led to increased drug concentration in the CSF, brain, and olfactory bulb compared to iv administration. Further, chitosan nanoparticles improved bioavailability, indicating a promising role for enhanced drug absorption through intranasal administration of ddl nanoparticles.

Development of Self-Directed Learning and Reinforcement Strategies for Effective Teaching and Learning in Pharmaceutical Calculations

Uyen Le, California Northstate University College of Pharmacy, Tarek Kassem, California Northstate University, Anhao Sam, California Northstate University. **Objective:** To enhance the effectiveness of learning and teaching in pharmaceutical calculations for pharmacy students. **Methods:** Firstly, we identified the current curriculum of pharmaceutical calculations across 138 accredited colleges of pharmacy (COPs). Secondly, we developed innovative self-directed learning (SDL) and self-reinforced assessment (SRA) modalities in our calculation course. In the SDL, we provided students with materials of calculations longitudinally since the admission time. Students practice quizzes for their self-learning under the guidance of instructors. In the SRA, pre-remediating quizzes were provided, and students wouldn’t be allowed to take their remediation exam if they could not achieve at least 80%. Lastly, assessments for the outcome of SDL/SRA were evaluated in term of course’s overall grades, course evaluation, and student perception. **Results:** Twenty-three COPs showed stand-alone calculation courses in their curricular. All surveyed instructors agreed that understanding questions is the most
challenging issue to students, and further practice was the best strategy to help struggling students. After the SDL/SRA was implemented in our course, as compared to the previous year, the resulted average grades increased 18% (90.5% ± 6.2 vs. 77.2% ± 13.8, p < 0.05), number of remediated students decreased (1 vs. 8), and evaluation in term of students strongly agree/agree for the course increased 9% (98.1% ± 1.9 vs. 84.6% ± 6.5, p < 0.05). In another anonymous survey, 73.8% of students thought that the SDL/SRA was helpful, 87.8% thought that SDL’s problem sets was useful, and 78.6% rated the SDL at 7-10 on a scale of 1 (least favor) to 10 (most favor). Conclusions: The implementation of SDL and SRA demonstrated an improvement of student learning in pharmaceutical calculations. Successful results from the study can be a modality expanded to other courses for optimal teaching and learning outcome.

Engaging Pharm.D. Students in Drug Development Initiatives Enhances Their Outcomes in the NAPLEX Preparation Assessments

Shams Fadhil, Chicago State University College of Pharmacy, Chantale Abuh Fonji, Chicago State University College of Pharmacy, Nandni Kakar, Chicago State University College of Pharmacy, Temitope Oni, Chicago State University College of Pharmacy, Adnan Restum, Chicago State University College of Pharmacy, Sami Nazzal, Texas Tech University Health Sciences Center, Ahmed Abu Fayyad, Chicago State University.

Objective: The objective of the current study is to investigate the effect of engaging student pharmacists in drug discovery and development initiatives through electives in their curriculum on the educational outcomes in the NAPLEX preparation assessments. Methods: Two groups of student pharmacists were involved in the current study, control and study groups. Members of the study groups were previously involved in drug discovery & development course electives which were recently introduced in the curriculum. The two student pharmacist groups were then involved in NAPLEX preparation assessments as part of their curriculum. The outcomes of these NAPLEX preparation assessments were compared between the two studied groups followed by individual feedback from the participated student groups. Results: The results of the educational outcomes as measured in the assessment performance on the NAPLEX preparation materials showed that a significant difference (P ≤ 0.05) between groups were observed. Student pharmacists who were involved in the drug discovery and development initiatives through electives outperformed the control group. Furthermore, individual feedback from the participated students indicated that such initiatives greatly helped them in enhancing their comprehension and knowledge connection while studying for the board exam. Conclusions: The results from the current work highlights the importance of introducing new tools in the Pharm.D. curriculum to boost students’ capabilities in their preparation for an important exam such as NAPLEX.

Identification of Suitable Small Molecules from Top 200 Drugs for 3D Printing Pharmaceutical Product Development

Amany Ghanem, Chicago State University College of Pharmacy, Alem Yemane, Chicago State University College of Pharmacy, Uzoma Emeakoroha, Chicago State University College of Pharmacy, Jayrold Bueno, Chicago State University College of Pharmacy, Chiemezie Okafor, Chicago State University College of Pharmacy, Negatu Desta, Chicago State University College of Pharmacy, Ahmed Abu Fayyad, Chicago State University.

Objective: To explore and determine suitable small-molecule candidates from the top 200 drugs for 3D printing/compounding-based pharmaceutical product development, potentially to rescue any drug-shortage situation as well as providing health care providers with more options from these top 200 drugs that are not commercially available. Methods: The top 200 drugs list from IQVIA were studied to determine suitable small-molecule candidates for 3D printing/compounding. https://www.accessdata.fda.gov and the orange book were used on the screen. The following criteria were used for the selection process: Available dosage forms, APIs physicochemical properties, Sterility requirements, Cost analysis, APIs cost and procurement challenges, Market demand, Generics availability/patents and Feasibility for 3D printing/traditional compounding. Results: The top 200 drugs list was screened according to the criteria listed in the method section. More than 100 drugs were selected with a proposed new dosage form. The new proposed dosage forms encompass 3D-printed modified topical, adhesive film, sublingual table, oral solution, oral suspension as well as oral solid for suspension. The current work entails phase one of the product development process, where further literature evaluation and preformulation studies are needed before the finished product can be piloted. Conclusions: The selected molecules are currently undergoing a second phase of selection which is based primarily on the physicochemical properties of the APIs and the availability of the raw materials. Some of the phase two-selected molecules will be piloted and formulated on a lab scale and subjected to further characterization and stability studies for a final recommendation on the feasibility of this approach.
It is expected that such work might help health care providers with more options for these top 200 drugs that are not currently available on the market.

**Incorporation of an Active Learning Compounding Activity During Pharmaceutics Lectures**

Melanie A. Reinhardt, *University of Arkansas for Medical Sciences*, Perry Marty, *UAMS*. **Objective:** To add an active learning experience to Pharmaceutics lectures for first-year student pharmacists. **Methods:** Active learning was included as part of four Pharmaceutics lectures on suppositories, inserts, and sticks. During each lecture, two groups of four students each were randomly selected to compound what was covered in that day’s lecture. When cocoa butter was discussed as a suppository base both groups compounded suppositories using cocoa butter. One group prepared suppositories by melting the base appropriately and the other group overheated the base which caused the cocoa butter to exhibit polymorphism. The suppositories were displayed during the next lecture to demonstrate the effect of both methods of preparation. During the other three lectures, students prepared suppositories from other bases, along with a lip balm, and a deodorant stick. Each preparation required 10-15 minutes of class time. During class, one student used an iPad to project the activity through Apple TV in the classroom so that all students could see the ingredients, equipment, and the entire compounding process. **Results:** A total of thirty-two out of eighty-five students participated in the actual compounding of the preparations. The overall feedback from students was very positive with most commenting that the compounding activities made learning about these dosage forms relevant and more interesting. Results from their exam performance on these topics will be shared and compared to previous years. **Conclusions:** Adding active learning with hands-on compounding activities to Pharmaceutics lectures maximizes student exposure to dosage forms. The activities facilitated discussion and improved the student’s experience during Pharmaceutics lab where they compounded additional formulations. The overall goal is to increase knowledge retention and improve performance.

**Is There a Need to Revisit Pharmaceutics Curricula in Light of Recent NAPLEX Trends?**

Ahmed Abu Fayyad, *Chicago State University*, Sami Nazzal, *Texas Tech University Health Sciences Center*. **Objective:** To (1) examine whether there is a need to revisit pharmacetics curricula to keep in line with recent changes to the NAPLEX exam, and (2) to demonstrate how a lecture on ophthalmic drug delivery can be revised in order to adapt to those changes. **Methods:** This was a qualitative and exploratory study where an insight from a recent NAPLEX graduate was used to examine whether core pharmacetics curricula as commonly taught in the P1/P2 years remain relevant to pass the competency exam. A lecture on ophthalmic drug delivery was used as a reference point to demonstrate key deficiencies in the current approach to pharmaceutics education and to highlight possible revisions. **Results:** Recent changes in the NAPLEX exam seem to focus on the clinical application of students’ knowledge of commonly used drugs. Little emphasis however was placed on calculations and basic knowledge of pharmaceutics beyond the generic concepts of dosage forms. This was evident from the ophthalmic drug delivery lecture where basic concept on eye physiology, drug delivery systems, and common excipients seemed irrelevant. Based on these observations the lecture was modified to incorporate commonly used drug with emphasis on translational and “clinical” pharmaceutics concepts. **Conclusions:** There is a need to transition basic pharmaceutics curricula into applied “clinical” pharmaceutics. This is feasible by transitioning pharmaceutics education from its common themes of “industrial pharmacy” into “clinical pharmaceutics” which emphasizes knowledge of drug products. Such transition however may require a significant buy in from the classically trained pharmaceutics educator.

**Learning Logs: A Tool for Training Students to Assess and Regulate Their Own Learning**

Laura M. Fox, *Presbyterian College*. **Objective:** Implement a novel assessment tool in pharmaceutics courses to (1) provide additional autonomy to students in designing their own learning, (2) aid students in regulating their own learning, and (3) help students become more self-aware of their learning. **Methods:** Learning Logs (LLs), were incorporated into pharmacokinetics (fall 2020, 2021) and drug delivery (spring 2021) to augment established learning activities and assessments (ie, homework assignments, quizzes, in-class exercises, exams). Each week, students completed a LL by self-assessing their mastery of each student learning outcome, determining any deficits, and selecting at least one activity from a menu of optional learning activities to address self-identified gaps in the mastery of the topic. Students then submitted evidence that they completed their chosen learning activity. Each LL was graded as incomplete or complete. If students chose to complete additional activities from the menu, they were awarded extra credit. The effectiveness of LLs was assessed by examining activities completed and student perceptions of the tool.
Results: Students overwhelmingly agreed that LLs achieved their purposes of affording autonomy (94%), facilitating SRL (94%), fostering self-awareness (82%), and providing clear expectations (90%), feedback (86%), and reward for extra effort (94%). Additionally, 98% of respondents agreed that the goals set by LLs were fair. On average, 98% of students completed the self-assessment for each topic with 25% documenting completion of one learning activity and 68% earning extra credit by completing additional activities. Conclusions: Learning logs are an effective and efficient tool for training students to assess and regulate their own learning.

Non-sterile Compounding Costs Survey of US Schools and Colleges of Pharmacy

Rajesh Vadlapatla, Marshall B. Ketchum University, Jeanne E. frenzel, North Dakota State University, Alexis N. Crawford, Virginia Commonwealth University, Kyle Duale, Northeast Ohio Medical University, Mary E. Fredrickson, Northeast Ohio Medical University (NEOMED).

Objective: To determine economic considerations associated with the facilitation of non-sterile compounding experiences for students in schools and colleges of pharmacy across the United States. Methods: An electronic survey was sent to members of the American Association of Colleges of Pharmacy Pharmaceutics Section and Laboratory Instructor’s Special Interest Group. Closed and open-ended questions were used to collect information pertaining to institutional demographics, student cohorts, compounding courses, types of compounds prepared, equipment, budgets, and personnel. Descriptive statistics were calculated using SPSS, and open-ended responses were assessed thematically. Results: Of the 82 surveys started, 74 were completed, yielding a usable response rate of 90.2%. Respondents reported annual compounding budgets between $3000.00 and $96,000.00. Twenty percent of respondents indicated they received donated supplies or equipment, and annual maintenance and compliance costs of equipment ranged from $400.00 and $18,000.00. Cost-saving measures pertaining to purchasing personal protective equipment and compounding materials were indicated by 42.5% of respondents. These involve contract pricing, purchasing supplies in bulk, price comparisons, use of simulated drugs, re-use of goggles or gowns, and donations. Additionally, 50% of respondents reported students share compounding equipment, and 29.6% of respondents collected a lab fee from students to offset nonsterile compounding associated costs. Regarding lab personnel, 50% of respondents employ laboratory assistants to support nonsterile compounding laboratory sessions, with paid positions ranging from $200-$1000 semester. Conclusions: Various approaches are used among institutions to facilitate and support nonsterile compounding instruction. Administrators and course directors may benefit from understanding current costs associated with nonsterile compounding training across the Academy and, more importantly, ways to reduce such costs while maintaining the intent and quality of these courses.

Performance on an Algebra-Based, Pre-Matriculation Math Assessment Predicts Academic Outcomes in Pharmacy Curricula

Melissa A. Burmeister, William Carey University School of Pharmacy, Timothy K. Fincher, William Carey University, Abby J. Weldon, William Carey University School of Pharmacy, Charles R. Breese, William Carey University School of Pharmacy. Objective: The ability to perform pharmaceutical calculations is a substantive portion of the NAPLEX and a fundamental component of the professional practice of pharmacy. Many pharmacy students lack adequate proficiency in calculations, which contributes to course and/or board exam failure. Methods: Program applicants are administered a 20-question, algebra-based math assessment on interview day (worth 5% of overall interview score) to evaluate math competency. Correlation analyses were performed on four student cohorts using their math assessment score (MAS) and (1) final grades in pharmaceutical science and pharmacotherapeutic didactic courses or (2) exam grades in Calculations. Correlations were classified as strong (r>0.4), moderate (r=0.2-0.4), or weak (r<0.2). Results: MAS positively correlated with all student outcomes. MAS strongly correlated with final grades (in order of correlation strength) in Pharmaceutics, Pharmacokinetics, Biochemistry, Physiology, and Exam 2 of Calculations (Topic: Dosing). MAS moderately correlated with final grades in Introduction to Medicinal Chemistry, Pharmacology, and Toxicology, Immunology, Principles of Drug Action I/II/III/IV, Pharmacotherapeutics I/III, Patient Care Lab I/IV, and Exams 1 and 3 of Calculations (Topics: Ratios & Proportions/Systems of Units and Parenterals & Nutrition, respectively). MAS weakly correlated with final grades in Pharmacotherapeutics II/IV and Patient Care Lab II/III. Conclusions: Although the strongest correlations between MAS and academic performance were observed in first-term courses that encompass foundational knowledge and/or a sizable math component, moderate correlations persisted throughout a majority of the curricula. A pre-matriculation, math assessment tool can, thus, identify “at-risk” students who would likely benefit from supplemental academic support.
Preparation and Characterization of Curcumin Pressure-Sensitive Adhesive Films

Sami Nazzal, Texas Tech University Health Sciences Center, Ahmed Abu Fayyad, Chicago State University.

Objective: Prepare adhesive films that can sustain the release of a water soluble formulation of curcumin. Methods: Curcumin was first formulated into a water soluble self-emulsified drug delivery system (SEDDS). Curcumin SEDDS was then loaded into films made from Soluplus® as the film forming polymer by the solvent casting technique at different loads (10%, 20%, and 30% w/w) and film thicknesses (10, 25 and 40 mils). The resultant films were analyzed for their mechanical strength and dissolution properties. The effect of Curcumin SEDDS loading and films thickness on the tensile strength, elongation, and adhesiveness of the films was investigated by a factorial experimental design. Results: Curcumin SEDDS was found to plasticize Soluplus® into transparent and pliable films. An increase in SEDDS loading reduced the tensile strength of the films and increased their adhesiveness and elongation properties. On the other hand, increase in film thickness was found to increase the tensile strength of the films and reduce their elongation capacity. When examined for their dissolution behavior, the films were found to sustain curcumin SEDDS release in the dissolution medium over 6 hours with a significant delay in release at lower SEDDS loads. Conclusions: Soluplus® can be used to formulate polymeric films that can sustain the release of curcumin SEDDS over an extended time while proving pressure sensitive adhesive qualities.

Providing an Interactive, Inclusive Team-Based Learning Pedagogy in a Hybrid Platform

Allyson Spence, Regis University School of Pharmacy, Erika Freitas, Regis University, Cassandra Stroup, Regis University School of Pharmacy. Objective: To identify, evaluate, and address inequities of our hybrid, team-based learning (ie, TBL) pedagogy offered during the COVID-19 pandemic. Methods: In Spring 2021, first-, second-, and third-year pharmacy students were emailed an optional survey questionnaire to gather their feedback on the Regis University SOP’s hybrid, TBL pedagogy that was offered during the COVID-19 pandemic. Questions focused on if this pedagogy was effective and inclusive (eg, did it provide adequate accommodations for students with disabilities?). From Fall 2020 to Spring 2022, faculty, staff, and students also received diversity and inclusivity training that addressed topics such as cultural biases, microaggressions, and bystander training. In-depth interviews and focus groups with students and faculty were conducted in the Spring 2022 semester to develop a broad understanding of how both the online and in-person TBL delivery independently achieved our goal of providing an inclusive environment. Results: Preliminary feedback from participating students indicated a high level of satisfaction with both our in-person and virtual TBL sessions. However, students also identified several barriers that should be addressed. For example, our in-person classes require students and faculty to wear masks, which does not accommodate students with hearing impairments who heavily rely on reading lips and facial expressions. Students and faculty alike highly valued the Diversity and Inclusivity workshops that were offered to faculty, staff, and students. Conclusions: Although our modified TBL pedagogy was well-received by students and faculty, we did identify several areas of opportunity for improving our approach. Furthermore, we recognized the value in offering formal diversity, equity, and inclusion training opportunities, which in the future, will be integrated into our curriculum for students and offered to faculty and staff through annual training opportunities.

Role of Course Structure in Developing Clinical Reasoning Skills

Laura M. Fox, Presbyterian College. Objective: To assess the effectiveness of a Pharmaceutics course redesign in developing the higher-order cognitive thinking skills (HOCTS) required for clinical reasoning. Methods: A lecture-based Pharmaceutics course was redesigned by adding recitations where students engaged in practical cases and application of concepts after completing a pre-recitation exercise. Multiple-choice exam questions administered before (2016, 2017) and after (2018, 2019) the course redesign were categorized based on Bloom’s taxonomy: remembering and understanding were classified as level 1, whereas applying, analyzing, and evaluating were designated as HOCTS and level 2. Conserved questions administered both before and after the redesign were identified. The effectiveness of the course redesign in emphasizing HOCTS was assessed retroactively by comparing the proportion of level 2 exam questions pre- and post-redesign via Chi-squared analysis with Fisher’s Exact Test. The hypothesis that the course redesign would have a positive impact on student learning was tested by comparing performance on conserved exam questions administered before and after the redesign via a one-tailed paired t-test. Results: The new course structure emphasized HOCTS more, as evidenced by exams that incorporated a significantly larger proportion (66%) of higher-level questions than before the redesign (57%), p = .007. Student performance overall also improved, with more students answering the conserved questions correctly after the redesign (M 76.95, SD 1.87)

than before the redesign (M 71.75, SD 1.96), p = .01. Conclusions: Adjusting lecture-based basic sciences courses toward active learning can enhance student learning. HOCTS requisite for clinical reasoning can be fostered in pharmacy students by intentionally redesigning pharmaceutics courses to emphasize HOCTS via concept application and clinical cases.

Stability of Multi-component Preparations Intended to Relieve Pain Through Transdermal Delivery

Maliah J. Mayweather, Xavier University of Louisiana College of Pharmacy, Brittany J. Bush, Xavier University of Louisiana College of Pharmacy, Tommy C. Morris, Xavier University of Louisiana College of Pharmacy. Objective: Arthritis is one of the leading causes of disability in the United States. Topically delivered pain medications offer definite advantages with targeted pain relief. Non-steroidal Anti-inflammatory Drugs (NSAIDs) are commonly used topically to provide pain relief while avoiding first-pass metabolism and GI-related issues associated with orally administered NSAIDs. The recent FDA over-the-counter (OTC) approval of Voltaren Gel®, which contains the NSAID, diclofenac sodium, as its active ingredient creates a unique opportunity to incorporate this commercially developed product into compounded preparations. One of our previous studies included Voltaren Gel® and confirmed that it contains penetration enhancers to aid topical absorption of the diclofenac sodium. The objective of this study is to test the stability of multi-component preparations made of Diclofenac, Baclofen, and Gabapentin, intended to relieve pain through transdermal delivery. Methods: To test the stability, Voltaren Gel® (Diclofenac) (1%), Gabapentin (10%), and Baclofen (2%) were prepared as a multi-component cream that was stored at Room Temperature, 30C, and 40C. Over 60 days, samples of the multi-component cream were analyzed using an HPLC (High-Performance Liquid Chromatography) method. Results: Results at room temperature, 30C, and 40C showed that Baclofen, Gabapentin and Diclofenac were stable. There was some assay variability with Gabapentin due to the small peak area. Conclusions: We concluded that Diclofenac, Baclofen, and Gabapentin were proven to be stable for at least 60 days at room temperature and in accelerated conditions. The next steps would be to see if there are enhanced permeability properties for Baclofen and Gabapentin in the Voltaren Gel.

The Use of 3D Printing to Enhance Students’ Knowledge Retention of the Top 200 Drugs

Adejumoke Adeniyi, Chicago State University College of Pharmacy, Sami Nazzal, Texas Tech University

Health Sciences Center, Ahmed Abu Fayyad, Chicago State University. Objective: The objective of the current work is to pilot the effect of introducing to Pharm.D. students the idea of using the 3D printing for future reformulation of top 200 drugs on the level of knowledge retention of these top drugs. Methods: Two groups of students were involved in the study, control and study groups. Students were introduced to the idea of using 3D printing to think about any shortcomings in the top 200 drugs that can be fixed using re-formulation design employing the 3D printing technology. Students were tasked to navigate through the top 200 drugs from all levels; indications, side effects, warnings, etc to locate any problem that can be tackled with such technology. More specifically, students’ interest was pushed and further motivated by introducing to them an in-house 3D printing machine and were told that this instrument to be used in such a future formulation initiative to solve the detected drawbacks of the top 200 drugs. Eventually, both students groups were allowed to sit for and take college-established drug cards assessments. Results: The study arm students who were introduced to the idea of looking into any potential side effects in the top 200 drugs showed significantly (P ≤ 0.05) higher grades on the drug cards assessments compared to the control arm. Participated students also individually reported a significant shift in the way they perceived the top 200 drugs list after such introduction. Conclusions: The current study clearly showed that tools such 3D printing might present an appealing strategy for pharmacy students to functionally integrate raw data into practice, as such integration resulted in better outcomes as reflected in higher grades on the drug cards assessment.

Pharmacy Practice

A 10-Year Trend in Authorship and Collaboration Patterns in United States Pharmacy Practice Publications

Samuel O. Adeosun, High Point University. Objective: To determine the trends in the patterns and characteristics of authorship and collaborations in United States’ Pharmacy practice publications from 2011 to 2020. Methods: Seven Pharmacy practice journals were selected based on objective measures from previous studies and data from Scimago Journal and Country Rank. Article and review document types published during the decade were obtained from the Scopus database. Data wrangling and analysis were done using Microsoft Excel, R programming language packages, and VOSviewer®. The Mann-Kendall trend test was used to determine the presence of (positive/negative) monotonic trends. Results: A total of 8,059 documents were published in the selected journals
(82.7% articles, 17.3% reviews) by 18,575 unique authors. There were statistically significant positive monotonic trends in the mean (3.8±2.2 to 4.7±2.4) and median authors per document, and related bibliometric indices (degree of collaboration, collaborative index, and coefficient). Despite a significant increase in the number of unique authors (2,343 to 3,337), productivity (document/unique author) significantly trended downward (0.32 to 0.26). The proportion of single-author publications also trended downward (12.2% to 3.6%), while documents with ≥5 authors trended upward (30.1% to 47.3%). Corresponding authors were first authors in the authorship byline in most publications (69.3-78.7%). With respect to the proportion of documents, inter-institutional collaboration was static, while international collaboration was small but trending up. Conclusions: The first authors are predominantly the senior (corresponding) authors in Pharmacy practice publications. The reason behind the upward creep in authors/document is not yet known but there is evidence of the previously reported negative effects on productivity. Therefore, while being careful to not discourage collaboration, faculty publication benchmarks should be crafted to address the detrimental effects of this trend on overall scholarly productivity.

A Bird’s Eye View: Teaching Holistic Patient Care Through Mind Mapping
Stephanie L. Sibicky, Northeastern University, Alexa A. Carlson, Northeastern University. Objective: To describe a mind mapping exercise created to assist pharmacy students in caring for patients using a holistic point-of-view and assess the activity’s utility based on student perception data. Methods: On an adult medicine advanced pharmacy practice experience (APPE), students were tasked with creating a mind map incorporating patient objective and subjective data to make connections and visualize the patient from a holistic point-of-view. Students hand drew or used technology (eg, bubbl.us, PowerPoint) to create their maps, displayed connections between available patient data, and presented conclusions and recommendations based on their findings (eg, linking renal function to antibiotics and antidiabetics). Due to the success on APPE, this activity was incorporated into a general medicine elective. All students were surveyed about their agreement to fifteen statements on a five-point Likert scale regarding the utility of the activity including two free-text prompts about key takeaways and feedback. Results: Of students surveyed, 9/26 APPE and 14/21 elective students completed the survey. Most students strongly or somewhat agreed that they were able to better visualize the patient’s problems and medications, view the care of a patient holistically, and felt more comfortable evaluating a patient’s medications and medical conditions. Additionally, they strongly or somewhat agreed that the mind map was useful to see the “big picture”. Free text responses highlighted the activity’s emphasis on connectivity and being able to “consider all the pieces of the puzzle”. Most concerning was learning how to use bubbl.us. Conclusions: APPE and elective students found the mind map exercise useful to view a patient holistically, making connections between subjective and objective information. Expanded use of this activity into required coursework is ongoing.

A Collaborative Approach to Managing Migraines: A Virtual Interprofessional Case Conference for Healthcare Students
Tiffany-Jade M. Kreys, California Northstate University, Rochelle Frank, California Northstate University, Sandra Nevis, California Northstate University, ForShing Lui, California Northstate University, Eugene Kreys, California Northstate University, Ashim Malhotra, California Northstate University. Objective: Interprofessional education (IPE) provides cross-disciplinary training opportunities for students in healthcare fields. Interprofessional case conferences (ICC), a type of IPE activity, encourage collaborative discussion, teamwork, and the exchange of different professional perspectives to establish an integrated care plan that optimizes patient outcomes. Because the COVID-19 pandemic disrupted interprofessional learning at our institution, a virtual, live, synchronous, interactive, case-based neurology ICC was held to address this learning gap. Methods: Built using Team-Based Learning pedagogy, the ICC focused on migraines and included 114, 116, and 12 students from the College of Medicine, Pharmacy, and Psychology, respectively. Learning objectives included: 1) diagnostic criteria, 2) epidemiology, 3) psychosocial and environmental risk factors, 4) pathophysiology, 5) pharmacological and non-pharmacological management, and 6) medication overuse headaches. Students worked in their pre-assigned IPE teams to assess a patient with migraines and present slides answering questions about their treatment plan. Emphasis was placed on adopting a holistic approach and clinical pearls were shared by the lead faculty facilitator. Students’ perceptions of the ICC were measured using confidence and perception surveys, while pre- and post-ICC quizzes tested content acquisition. Results: Of the 193 survey respondents, 69% agreed and strongly agreed that the format was effective, 71% felt they learned from their peers, with 74% acquiring knowledge on migraine assessment and management, and 76% reporting that the facilitator-led discussions helped
their understanding. About 77% of the respondents indicated improvement in their understanding of migraine pathophysiology. Eighty percent felt a thorough review of pharmacology was provided, 81% indicated learning about patient education pearls, and 80% felt they learned about medication overuse headaches. **Conclusions:** The neurology ICC offered an interactive virtual platform for teaching interprofessional clinical problem-solving during the ongoing pandemic.

**A Community Pharmacy “Bootcamp” Activity**

Tyler M. Kiles, The University of Tennessee Health Science Center College of Pharmacy. **Objective:** The objective of this study was to assess student perceptions of and performance during an innovative community pharmacy bootcamp activity. **Methods:** The Bootcamp was designed for second-year PharmD students enrolled in a Community Pharmacy elective course. A prescription verification exercise was introduced; however, during this exercise students were intermittently interrupted (every 2-3 minutes) by the instructor with common pharmacist tasks in the community setting. To simulate these tasks (i.e.: receiving a phone call, patient counseling, vaccine administration, checking controlled rx monitoring database etc.), students were directed by the instructor to perform other physical activities (i.e. balancing on one leg, walking around the classroom, jumping jacks, and sending an email). After the activity, students uploaded a video reflection via FlipGrid. Transcripts of the videos were assessed with content analysis. **Results:** The activity was delivered during a 2-hour class period. Of the 28 students, 86% (n=24) fully completed all 12 prescription verifications in the allotted time; however, the average accuracy was 53%. Content analysis of Flipgrid reflections revealed 3 themes: break from typical lecture, importance of attention to detail, and understanding the pharmacist perspective in workflow. **Conclusions:** The community pharmacy bootcamp was a fun and engaging way to expose students interested in community pharmacy to the realities of daily practice in the retail pharmacy setting. This activity was effective in helping students to discover the need for development of further skills in addition to clinical expertise. Future directions with this activity may include integration into a management and team leadership course series.

**A Comparison of Pharmacy Student Interprofessional Education Self-Evaluations Utilizing IPAS and ISVS-21 Assessment Tools**

Maria Tomoiaga, MCPHS University, Lane Anson, MCPHS University, Phung On, MCPHS University-Boston, Yulia Murray, MCPHS University - Boston, Jennifer Prisco, MCPHS University-Boston. **Objective:** To compare the change in pharmacy students’ self-evaluation towards interprofessional education (IPE) after case-based seminars with interprofessional-centered objectives using the validated Interprofessional Attitudes Scale (IPAS) and Interprofessional Socialization and Valuing Scale (ISVS-21). **Methods:** Class of 2022 PharmD students collaborated with medical students on an IPE case. Pharmacy students’ attitudes were assessed using IPAS. This event was repeated for Class of 2023 PharmD students using ISVS-21. For each event, students participated in reflective discussion on their professional roles/responsibilities and discussed how they can collaboratively contribute to better patient outcomes. Surveys were given pre- and post-event, analyzed by qualitative methods, and mapped to associate survey questions with respective Interprofessional Education Collaborative (IPEC) Core Competencies to compare findings. **Results:** The percentage of students who agreed to have their results used were: IPAS Pre (55.5%), Post (57.6%); ISVS-21 Pre (49.8%), Post (45.3%). Average change from pre- to post-survey for Fairly to a Very Great Extent or Somewhat to Strongly Agree was 18% for ISVS-21 vs. 3% for IPAS. Average change in IPEC Core Competencies was greater for ISVS-21 compared to IPAS: Values and Ethics (19%/ 3%), Roles and Responsibilities (18%/3%), Interprofessional Communication (17%/2%), Teams and Teamwork (17%/7%). **Conclusions:** ISVS survey captured a greater degree of change in students’ self-evaluation after IPE. Results indicate differences in interpretability between the assessment tools, which may be influenced by different sensitivities. Results may be affected by varying question focus; IPAS focuses on attitudes, ISVS focuses on transformative learning. To evaluate event-specific change in interprofessional attitudes, ISVS-21 appears to be a more distinguishing tool. Limitations include lower percentage of evaluable surveys than response rate. Strengths include survey mapping to IPEC Core Competencies and identical IPE events.

**A Level of Trust: Exploring Self-Assessment of Entrustable Professional Activities in a Skills Lab**

Michelle N. Schroeder, The University of Toledo, Julie A. Murphy, The University of Toledo, Aaron J. Lengel, The University of Toledo, Diane M. Cappelletty, The University of Toledo, Sarah M. Aldrich Renner, The University of Toledo, Derek J. Gyori, The University of Toledo, Mitchell S. Howard, The University of Toledo College of Pharmacy & Pharmaceutical Sciences. **Objective:** To examine student self-assessment of performance in a skills lab course using entrustable professional activities (EPAs) mapped to objective structured clinical exams
(OSCEs) and key semester activities. **Methods:** Third-year student pharmacists ranked their perceived level of entrustment using a three-point scale (1= observation only; 2= direct supervision; 3= indirect supervision) for 13 EPA core statements in two consecutive semesters. An individualized EPA report was provided to students each semester revealing the levels of entrustment from the performance model. Levels of entrustment for the performance model were generated from a compilation of instructor assessments. Wilcoxon signed-rank tests compared the difference in median scores between the self-assessment survey and the performance model. Self-assessment accuracy and bias were explored as secondary objectives and differences over time were assessed using a paired-samples t-test. Cronbach’s alpha was employed to test internal reliability of the self-assessment survey and performance model. **Results:** Eighty-seven students were included in the analysis. A significant difference was observed between self-assessment and the performance model for most EPAs in both the fall (Z=-2.38, \( p = .017 \)) and spring semesters (Z=-7.77, \( p < .001 \)). Self-assessment accuracy significantly improved over time (T1=0.67, T2=0.62, \( p = .022 \)). Students exhibited under confidence of self-assessment in the Fall and overconfidence in Spring. The Cronbach’s alpha values for the self-assessment survey and performance model were above 0.8, indicating good reliability. **Conclusions:** Further research is needed to determine if additional educational methods, such as completing a reflection after receiving the EPA report, could help improve self-assessment skills. Potential adjustments to the EPA performance model to improve correlation between self-assessment and performance may also be explored.

**A Peer Teaching Educational Gaming Activity to Reinforce Students’ Knowledge of Newly Approved Medications**

Jane Shtaynberg, **Fairleigh Dickinson University**, Anna Nogid, **Long Island University**, Rim A. Elbeshbeshy, **Long Island University**, Anastasia Manesis, **Long Island University**, Suzanna Gim, **Long Island University.**

**Objective:** To describe the development and implementation of a peer-teaching virtual, educational gaming activity designed to reinforce and enhance students’ knowledge of newly approved medications. **Methods:** Pharmacy students participating in an academia APPE developed and delivered a virtual, educational gaming activity on a topic of newly approved medications, to peers enrolled in a Senior Seminar course required in the fourth professional year. A pre- and post-activity knowledge-based assessment and perception-based questionnaire were developed and administered to participants. Observations regarding teamwork and communication during the activity were collected by activity facilitators. One-sample t-tests were used for pre-post knowledge assessments. Descriptive statistics were used for demographic and perceptions data. **Results:** Sixteen students participated in this virtual educational activity. Students’ mean scores on the post-activity knowledge assessment were significantly higher as compared to the pre-activity assessment (8.1 vs. 6.3, \( p < .01 \)). The game was perceived positively by the participants. All participants felt the activity increased knowledge of newly approved medications. All facilitators observed students working effectively as a team to solve the puzzles and perform required gaming tasks. **Conclusions:** A peer-developed, peer-led virtual, educational gaming activity can be an effective, engaging, and enjoyable way to reinforce students’ knowledge of newly approved medications.

**A Pilot Project Using Question Tagging as a Mechanism for Student Feedback**

Lauren M. Hynicka, **University of Maryland**, Neha Pandit, **University of Maryland**, James Trovato, **University of Maryland.**

**Objective:** To determine if question tagging feedback improves student exam performance in a first year, first-semester course. **Methods:** General Patient Management (GPM) is a first-year fall course that introduces concepts of general patient management, clinical chemistry, and therapeutics of selected gastrointestinal disorders. The course has three exams including a cumulative final. All exam questions are tagged in ExamSoft for one of three levels of Blooms Taxonomy and a PCOA sub-topic, as well as other tags. During the Fall 2021 semester, the course manager offered to meet with students who scored < 70% on their first or second exam. Those meetings included student self-reflection of performance and course manager feedback on the tags. Exam performance in 2021 was compared to 2017, 2018 and 2019 when this type of feedback was not offered to students. **Results:** A total of 19 and 24 reviews were offered, after exams one and two respectively, and 11 meetings were held after each exam. Students were able to identify a reason for their poor performance, most commonly lack of preparation. There was no difference in exam performance between students who did or did not attend the exam reviews. Final grade distribution in 2021 for students who
A Rheumatoid Arthritis Simulation that Integrates Specialty Pharmacy, Managed Care, Pharmaceutical Sciences and Therapeutics Concepts

Ashleigh L. Barrickman, West Virginia University, Marina Galvez-Peralta, West Virginia University, Heather Johnson, West Virginia University. Objective: To develop and assess a rheumatoid arthritis (RA) simulation that integrates concepts from therapeutics, pharmaceutical sciences, managed care and specialty pharmacy. Methods: This new simulation was implemented in a concentrated systems-based Autoimmune Diseases course for second-year PharmD students. Students had 15 minutes to individually complete the activity, which required them to interact with a simulated insurance representative and explain the rationale for an injectable RA medication, counsel a patient on the medication and address questions related to insurance coverage/copays. Students were evaluated by faculty in real-time using a standardized rubric. Students completed pre and post-surveys to assess changes in confidence and perceptions of the activity. Knowledge-based questions related to concepts in the simulation were included on associated course exams to assess knowledge retention. Results: Sixty-three students completed the simulation in a four-hour block with six faculty evaluators. Ninety-five and 84% completed pre- and post-surveys, respectively. Survey results indicated statistically significant changes in self-reported knowledge for RA concepts, medications and formulary concepts (p< 0.001, p< 0.01 and p< 0.001 respectively). Most students reported a better understanding of managed care (91%) and specialty pharmacy (96%) as a result of the simulation. In subsequent course exams, students demonstrated short-term knowledge retention of concepts from the simulation, with between 91-100% of students answering the eight conceptual questions correctly. Conclusions: Advantages of this integrated simulation include increasing student knowledge on concepts from multiple disciplines and easy replicability; disadvantages include faculty time required for planning and implementation. As pharmacy services expand, it is critical for institutions to prepare learners to provide patient care in a variety of settings and to adequately assess clinical skills.

Integrated simulations such as this can effectively meet these objectives.

A Survey of Faculty Opinions on Educational Outcomes in Pharmacist Skills in a Pharmacy Curriculum

Viet V. Nguyen, Chapman University, Moom Roosan, Chapman University School of Pharmacy. Objective: Teaching and assessment of clinical skills in US pharmacy schools are becoming increasingly important as pharmacist scope of practice expands. However, there continues to be lack of guidance/consensus regarding which clinical skills are considered necessary for entry-level graduates (ELGs) of PharmD programs. The objectives of this study are to 1) evaluate which clinical skills pharmacy faculty consider necessary for (ELGs) of PharmD Programs; and 2) identify the competency level pharmacy faculty consider necessary for ELGs to achieve for each skill. Methods: This was a retrospective data analysis project. All part-time/full-time pharmacy faculty at a single-institution in California were asked to participate in a voluntary anonymous survey via Qualtrics. The survey identified 73 discrete pharmacist skills across 8 domains. Respondents were asked to identify what competency level a graduate would be expected to achieve for each skill. All responses were evaluated and level of achievement expected for each skill was categorized as know, perform, or teach based on the majority of faculty responses. Results: 37 faculty completed the survey. The majority of skills (42) were expected to be achieved at the “teach” level of competency and only 10 skills were expected at a “know” level. Skills expected at the teach level fell primarily in the medication administration and point-of-care testing domains (13/13 skills and 8/8 skills respectively) while skills expected at the perform level were expected in the oral and professional communication, documentation, and CA pharmacist protocol domains. In the physical assessment domain 9/13 skills were expected at the “know” levels. Conclusions: The majority of knowledge-based and performance-based skills are expected to be achieved at high levels. Increased guidance and standardization in the areas of skills assessment is warranted.

A Tale of Two Reviews: Digital Storytelling in a Self-Care Pharmacy Course

Jenna Mills, University of Findlay, Jason W. Guy, University of Findlay, Julie H. Oestreich, University of Findlay. Objective: Digital storytelling provides a unique medium for patient simulation, but its use in pharmacy education is lacking. In the first phase of our pilot, we
found digital storytelling to be as effective as lecture-based delivery. This follow-up study evaluated students’ knowledge, confidence, and satisfaction after digital storytelling exam review sessions were conducted 1) virtually and 2) in-person. When comparing between the two modalities, we hypothesized there would be no difference in these outcomes. **Methods:** Investigators created immersive digital patient cases and reflective questions throughout a series of connected videos in an established self-care course. The digital storytelling review was conducted before one exam virtually in 2020 (n = 50) and in-person during 2021 (n = 49). Other exam review sessions followed a lecture-based format. Following each session, surveys assessed student knowledge and confidence regarding the upcoming exam. Open-ended comments allowed students to address satisfaction and compare digital storytelling to lecture-based reviews in the course. Comments were assessed by thematic analysis. Mann-Whitney U and Chi-square tests compared the virtual and in-person reviews (alpha = 0.05). **Results:** Survey response rates were 70% (2020) and 63% (2021). Compared to the virtual digital storytelling review, students felt at least as confident and satisfied in-person (all p > .05). Assessment scores were significantly increased for two of the four knowledge questions with virtual delivery (p = .0298, p = .0463). Thematic analysis revealed the digital storytelling review was overall beneficial (n = 13) and interactive (n = 4), though coverage of content during the review could be expanded (n = 6). **Conclusions:** Our novel self-care review represents a first attempt in the pharmacy literature to apply digital storytelling. These findings support digital storytelling for virtual and in-person settings and may be of particular significance for online or hybrid self-care pharmacy courses.

**Adverse Childhood Experiences Among Doctor of Pharmacy and Doctor of Physical Therapy Students**

Elisa M. Greene, *Belmont University*, Amy Henneman, *Belmont University*, Gary Austin, *Belmont University*. **Objective:** Adverse childhood experiences (ACEs) have established links to poor behavioral skills and academic performance in children and to poor health outcomes in adults, with scores of 4 or higher carrying high risk. Little is known about ACE prevalence or impact on successful progression in professional students. The objective of this study was to evaluate the prevalence of ACEs among Doctor of Pharmacy (PharmD) and Doctor of Physical Therapy (DPT) students at one institution. **Methods:** The validated ACE questionnaire was administered via Qualtrics survey software and offered to all PharmD and DPT students in Spring 2022. Data was analyzed utilizing descriptive statistics. **Results:** Completed surveys were submitted by 107 students out of 460 (23% response rate) with 46.5% of responses from pharmacy students. The average age was 24.9 years. The average ACE score was 2.6. The average ACE score among PharmD students was 4.1 versus 1.4 among DPT students. Thirty-four participants scored > 4 with 26 being PharmD students and 8 DPT students. Almost 28% of respondents reported having contemplated suicide. **Conclusions:** High ACE scores among professional students represent an untapped opportunity for development of interventions to support student success.

**An Evaluation of Multimedia Content in a Critical Care Pharmacotherapeutic Course**

Scott T. Benken, *University of Illinois at Chicago College of Pharmacy Department of Pharmacy Practice*, Jeffrey Mucksavage, *University of Illinois at Chicago College of Pharmacy Department of Pharmacy Practice*, Rachel Yudkowsky, *University of Illinois College of Medicine at Chicago Department of Medical Education*, Madison Collins, *University of Illinois at Chicago College of Pharmacy*, Dustin Woo, *University of Illinois at Chicago College of Pharmacy*, Jeffrey Cheung, *University of Illinois College of Medicine at Chicago Department of Medical Education*. **Objective:** To investigate the hypothesis that there will be misalignment between didactic multimedia materials utilized by faculty in a Critical Care elective with Mayer’s Principles for Multimedia Learning. **Methods:** We used the learning object review instrument – presentation design object (LORI-PDO) to rate how video recorded lectures aligned with multimedia best practices as defined by Mayer’s Principles of Multimedia Learning. Additionally, we employed a systematic process to capture the number and type of misalignments with these principles. We used correlations to assess the association between faculty characteristics and LORI-PDO ratings and proportions of misalignments. **Results:** A total of 555 PowerPoint slides were reviewed from 13 lectures from 13 faculty. The average (SD) LORI – PDO score per slide was 4.44 (0.84) with an average score per lecture ranging from 3.83 (0.96) to 4.95 (0.53). Misalignments with multimedia principles were captured in 112 (20.2%) lecture slides. Within lectures, the average number of misalignments was 12.2 (27.6%) per lecture and ranged from 0 (0%) to 35 (72.9%) misalignments per lecture. The principal misalignments included violations in Coherence, 74 (66.1%); Signaling, 17 (15.2%); and Segmenting Principles, 9 (8%). No faculty characteristics were significantly associated with LORI – PDO ratings or proportion of
misalignments within a lecture. Conclusions: Faculty had high ratings for their multimedia material when assessed by LORI tool. Misalignments with multimedia principles were relatively frequent and related primarily to extraneous processing. These misalignments, when addressed, have the potential to improve learning, suggesting an opportunity for faculty development to optimize multimedia best practices. Future investigation is needed to clarify how clinical pharmacy faculty develop multimedia material and the impact of faculty development on multimedia best practices and learning outcomes.

An Innovative Approach to Teaching Wellness Principles and Promoting Health Behavior Change in Pharmacy Students

Dana Manning, Wilkes University, dominick Trombetta, Wilkes University. Objective: We describe a project and study where students learn and engage in the development of personal wellness goals and implement behavior change by practicing it on themselves while learning the principles of behavior change counseling applicable to promoting wellness in patients. We hypothesized this educational model would lead to a sustained change in student perceptions and practices for their own and patient wellness. Methods: We instituted a reflection guided, rubric assessed project within the required didactic curriculum which leads students through learning the foundations of wellness theory, development and prioritization of their own wellness goals, the implementation of their goals in real time, and finally reflection and reevaluation of their goals moving forward. Results: Survey data from three different time points were gathered - prior to beginning the project, immediately after the project completion, and six months later during the student’s APPE year. Our data indicates that the project increased the perception that wellness teaching for patients was part of a pharmacist’s role (23% vs 68%). The project also increased the confidence of the students to discuss wellness practices with patients (13.5% vs 76%). Importantly, the project increased the student confidence for initiating and sustaining behavior change in patients (8% vs 56%). Our results also demonstrated a durable effect of this project into the APPE rotations, with 91% of respondents stating that teaching wellness practices is part of a pharmacist’s role, and 64% of respondents incorporating wellness teaching into the care of their patients during rotations. Conclusions: Instituting a project centered around promoting individual student wellness goals while learning behavior change strategies through hands-on application is a valuable way of addressing both curricular outcomes and student health simultaneously.

An Innovative Longitudinal Skills Lab for Experiencing Pharmacists’ Roles in Transitions of Care

Brittney A. Meyer, South Dakota State University, Alex Middendorf, South Dakota State University, Teresa Seefeldt, South Dakota State University, Scout Forbes-Hurd, South Dakota State University. Objective: To assess the impact of an innovative five-week longitudinal skills lab on students’ Transitions of Care (ToC) knowledge and skills. Methods: Students role-played inpatient pharmacists for the first two weeks, first completing a medication reconciliation with a human patient simulator and a simulated electronic health record, then reviewing medication orders and providing discharge counseling for the same patient. Week 3, students completed a 1-week post-discharge follow-up MTM encounter as an outpatient pharmacist and completed Comprehensive Medication Review documentation online. Week 4 included simulated communication with the provider to follow-up on recommendations and patient communication. Common errors were incorporated such as an inpatient medication inappropriately continued at discharge and an outpatient prescription that was never picked up. Debriefing over ToC challenges occurred in the final week. Assessment of the activity was conducted through a qualitative and quantitative survey administered in Weeks 1 and 5. Sixty students completed both surveys and had their responses matched pre/post. Results: Students’ confidence in their ability to perform the steps in ToC significantly improved after completion of the activity (p< 0.0001) based on quantitative analysis. The qualitative data showed similar results, with over 43% of student responses identifying confidence in skill performance as the item they were most proud of after participating in this longitudinal lab. Student ToC knowledge also improved. Trends toward increased knowledge of patient, provider, and health-system challenges in ToC were observed, with one item (insufficient patient education) reaching statistical significance (p< 0.05). Conclusions: Use of an innovative longitudinal skills lab design and a variety of technologies consistent with those used in actual care delivery was effective in increasing students’ knowledge and skills in a variety of transitions of care settings.

Assessing the Utility of a Medication History and SBAR Correspondence Activity for First-Year Pharmacy Students

Kimberley J. Begley, Creighton University School of Pharmacy and Health Professions. Objective: To determine the usefulness and perceived value of a medication history and SBAR submission in a first-semester, first-year
pharmacy skills lab course. 

Methods: First-year students completed a simulated telepharmacy consultation with faculty portraying patients. In this one-on-one video recorded activity, faculty assessed students’ ability to obtain a comprehensive medication history. Students analyzed their patient’s case and submitted a written SBAR correspondence to the prescriber. Students were then paired with a classmate and peer-reviewed their partner’s recorded session using the faculty-developed rubric. Scores for all assessments were revealed to students synchronously. Students watched and reflected on their own performance. A mixed quantitative-qualitative analysis based on survey questions and student reflections were used to evaluate this activity.

Results: Two-hundred-ten students (90%) completed a voluntary pre- and post-survey after participating in the activity. Two-sided Wilcoxon signed rank tests were utilized to evaluate data. There were significant changes in the survey areas related to student confidence (3.71 vs. 4.47, p < .001), understanding the assessment rubric (4.16 vs. 4.81, p < .001), usefulness of self-assessment (4.26 vs. 4.80 p < .001), and usefulness of peer assessment (4.32 vs. 4.57 p = .02). Skill assessment and feedback from faculty were ranked the most useful form of feedback and significantly increased from pre-test to post-test (from 39.63 to 48.49, p = 0.001). A systematic thematic analysis was conducted on free-text reflections. Prominent themes were improved communication with patients, the application of skills they’ll use as a future practitioner, increased confidence, and learning from self and others.

Conclusions: A medication history and SBAR correspondence is a beneficial activity that strengthened first-year pharmacy students’ communication skills and increased confidence in their abilities. Self-assessment, peer-assessment, and faculty-assessment were all found to be valuable feedback tools.

Assessing the Utility of Pre-Course Assessment and Voluntary Pre-Work in Two Required Integrated Pharmacotherapy Courses

Laura M. Challen, University of Health Sciences and Pharmacy in St. Louis, Joseph S. Van Tuyl, University of Health Sciences and Pharmacy in St. Louis, Suzanne G. Bollmeier, University of Health Sciences and Pharmacy in St. Louis, Jasna Marjanovic, University of Health Sciences and Pharmacy in St. Louis, Anastasia L. Armbruster, University of Health Sciences and Pharmacy in St. Louis.

Objective: To determine the impact of pre-semester assessments on student outcomes in two required courses (Integrated Pharmacotherapy (IP): Pulmonology and IP: Cardiology).

Methods: This study included second-year professional pharmacy students enrolled in two required IP courses during the fall semesters of 2019-2021. The same number of exams were administered each semester, and lecture content did not differ significantly between years. Voluntary pre-work and pre-semester assessments were added at the beginning of fall 2021. Following IRB approval, overall course grades and examination scores between each year were analyzed via the Kruskal-Wallis test with pairwise comparisons, if statistically significant results were observed. Linear regression was performed to assess the association between pre-course assessment scores and overall course grades. Student perceptions of the pre-course assessment were also captured.

Results: Of the 454 students enrolled in this study, there was no difference in median overall Pulmonology course grades (85.93%, 86.67%, 86.29%; p = .631) or Cardiology course grades (80.25%, 78.3%, 79.96%; p = .409) between 2019, 2020, and 2021. Pulmonology Exam 1 (p = .033) and Cardiology Exam 3 (p = .032) scores were significantly higher in 2021. Pre-course assessment scores had a statistically significant, positive association with overall course grades. Half of the surveyed students strongly agreed or agreed that completing the course prep work is an effective approach to learning.

Conclusions: Overall course grades did not differ between the years that offered pre-work versus those that did not, but pre-course assessment scores correlated with overall course grades. Voluntary pre-work did not appear to impact student results, but pre-course assessments may assist in predicting student success in each course.

Assessment of Covid-19 on Pharmacy Practice Faculty Well-Being

Cathy Oliphant, Idaho State University, Barbara Mason, Idaho State University.

Objective: The Chronicle of Higher Education COVID survey identified that the majority of faculty were experiencing increased anxiety, stress, workload and deterioration of work-life balance. The purpose of this survey study is to examine the relationship of quality of life, burnout and associated factors during COVID in pharmacy practice faculty.

Methods: A cross-sectional, descriptive survey was emailed to pharmacy practice department chairs for distribution to faculty in May 2021. The survey collected demographic data, employment changes, workload and quality of life related questions adapted from previously validated surveys.

Results: 264 surveys were completed with the majority being female (72.7%) with a rank of assistant (38.3%), associate (39.4%) and full professor (18.8%). Sixty percent were non-tenure track faculty. The average hours worked per week pre-COVID for the majority was 41-50; during COVID, the majority increased to over 50 hours.
Assessment of Online Modules to Increase Knowledge of Geriatric Care in Ugandan Pharmacists

Nicole C. Cheung, Florida A&M University, Karen-Beth Bohan, Binghamton University, Winnie Nambatya, Makerere University Department of Pharmacy; Binghamton University. Objective: Training for pharmacists targeting the needs of geriatric patients is lacking in Uganda. To fill this gap, a novel online geriatric pharmacotherapy continuing professional development (CPD) program was developed. Objectives include: assessing the improvement of pharmacists’ knowledge of geriatric care, three-month knowledge retention, learning preferences, and pharmacists’ satisfaction. Methods: This is an IRB-approved, quasi-experimental uncontrolled study using a before and after design to examine geriatric knowledge and learning media preference of Pharmaceutical Society of Uganda (PSU) pharmacists. A 3-module, each 20 minutes, CPD course covering fall prevention (FP), gastroesophageal reflux disease (GERD), and cardiovascular disease (CVD) was developed in Blackboard, LMS. Data was analyzed with descriptive statistics. Results: Of the 64 participants, 24, 20, and 19 completed the pre- and post-module quizzes for FP, GERD, and CVD, respectively. Pre- and post-module mean quiz scores for FP were 66.2% vs. 85.8%; GERD were 51.8% vs. 96%; and CVD were 52.4% vs. 91.6%. Five participants completed the 3-month post retention survey, and scored 72%, 72%, and 56% for FP, GERD, and CVD respectively. Before and after this course, 21% and 12.5%, respectively, agreed they prefer live over online CPD programs; 87.5% strongly agreed this course was effective, and 100% are very likely/likely to participate again. Conclusions: This study demonstrated an online geriatric CPD course was effective in improving knowledge. Retention at 3-months improved over baseline, although not as well as immediately after the course. Implementing longer duration learning modules or activities longitudinally may increase knowledge retention. Perceptions of online learning improved, demonstrating the potential of future uptake of additional online learning opportunities for PSU pharmacists, which may be transferable to pharmacists worldwide.

Assessment of Pharmacy Students’ IPEC Core Competency Using Observer-Based Evaluation

Philip T. Rodgers, University of North Carolina at Chapel Hill, Kimberly Sanders, University of North Carolina at Chapel Hill, Tia Belvin, University of North Carolina at Chapel Hill, Jackie M. Zeeman, University of North Carolina at Chapel Hill. Objective: Interprofessional education and practice (IPEP) experiences are important for developing collaborative practice ready graduates. While literature outlines various IPE activities, gaps exist regarding IPE evaluation strategies; most focus on student self-evaluation. This study aimed to pilot an observer-based assessment strategy of IPEC Core Competencies for student pharmacists participating in didactic-based IPE experiences and assessed its feasibility of use. Methods: The IPEC Competency Assessment Tool of Individual Students (I-CATIS) was developed to assess student IPEC Competency via observer-based evaluation by faculty facilitators in didactic IPE activities. The I-CATIS was piloted in a small-group case collaboration activity involving pharmacy and dental students that evaluated thirteen of the IPEC competencies. Pharmacy faculty facilitators were trained on the I-CATIS and evaluated each pharmacy student in their small group. I-CATIS results were collected and facilitators surveyed about the I-CATIS evaluation. Students also completed a self-evaluation of the IPEC competencies using a 6-point self-efficacy scale. I-CATIS results and student self-evaluation scores were compared. Results: Overall, 63 pharmacy students across 12 groups were evaluated by six faculty facilitators. Facilitators indicated 49%-87% of the IPEC competency items were “not-observable” during the activity. Across all observed competencies, 64% of students were rated as “developing” the competency and 0-6% rated as “competent”. Facilitators indicated the evaluation contained valuable feedback for students but was burdensome to complete while concurrently facilitating IPE groups. Conclusions: The I-CATIS enabled observer-based evaluation and feedback on individual students IPEC Competency but was challenging for faculty to complete while simultaneously facilitating
Assessment of Pre-Implementation Perceptions of a Blocked PharmD Curriculum

Brittany L. Riley, Marshall University, Tiffany Davis, Marshall University, Daniel Brazeau, Marshall University, Kimberly Broedel-Zaugg, Marshall University, Omar F. Attarabene, Marshall University, Sarah Plummer, Marshall University. **Objective:** The purpose of this research is to assess faculty and student pre-implementation perceptions of a block design PharmD curriculum. **Methods:** Following an IRB approval, a survey invitation was sent to all faculty and current P1 students in the Fall of 2021, the semester prior to beginning the block format. The survey inquired about previous experiences with and the perceived barriers and benefits of the block format. Descriptive statistics were reported for both faculty and students. Likert scale questions were compared between faculty and students using t-test. **Results:** Twelve faculty (response rate: 44.4%) and 14 students (response rate: 37.8%) completed the survey. Overall, there was a low level of experience with a blocked curriculum and no statements denoting a significant difference between faculty and students. Faculty were more concerned with how implementing the block format will impact progressions (faculty mean: 6.25, student mean: 3.79) and introductory pharmacy practice experience coordination (faculty mean: 5.50, student mean: 3.58). Students believed block courses would allow instructors to expand the use of teaching techniques more than faculty (faculty mean: 3.67, student mean: 5.86). In the blocked format as a whole design for professional students was middle of the road with an average of 2.89 on a five-point scale. Common concerns included time for pre-work and time spent in classroom. The most common benefit cited by both students and faculty for a block curriculum was not having multiple classes at one time. **Conclusions:** Prior to the implementation of a block schedule, faculty and students remain undecided about the impact of the blocked curriculum.

Assessment of the Long-Term Impact of a Well-Being Course

Katherine S. Wadas-Thalken, Creighton University; Amanda Wise, College of St. Mary; Kevin T. Fuji, Creighton University. **Objective:** To assess the longitudinal impact of a well-being elective course on pharmacy students’ grit and perceived well-being. **Methods:** Between fall 2018 and spring 2021, a Well-Being and Student Success elective course was offered four times and enrolled 95 students. Students completed the Short Grit-S Scale at the beginning and end of the semester. In August 2021, students were invited to complete the Short Grit-S Scale for a third time, along with a survey to assess their perspectives on how the course may have influenced their long-term well-being. **Results:** Eighteen students completed the third administration of the Short Grit-S Scale and well-being survey (19% response rate). Results demonstrated 80% or greater of the participants agreed/strongly agreed the course was helpful for their overall well-being and lessons learned enhanced their well-being, they were pleased with their personal well-being, and had an interest in ongoing well-being activities. The average Grit-S scores showed an increase from the beginning of the course (3.88 out of 5), to post-course (3.99) and the third administration (4.09). Although this increase was not statistically significant (p=.133), the study was limited by a small sample size. Future work will increase the sample size and associated statistical power. **Conclusions:** The findings show potential value from teaching well-being material in a formal course setting. Participant self-reported data showed lasting value and appreciation of course content and had increased self-awareness of well-being elements. As well-being and burnout continue to be of concern in pharmacy, offering well-being-focused elective courses or integrating this important content into a variety of courses may help students better manage well-being and burnout both during their current educational training and in their future practice.

Association of Cocurricular Activities to ACPE Standard #3 Elements by Student-Reported Competencies

Mark A. Munger, The University of Utah, James Herron, University of Utah Health, Hanna Raber, University of Utah Health, Gisel Gomez, University of Utah Health, Casey Tak, University of Utah. **Objective:** To assess the impact of cocurricular activities on Accreditation Council of Pharmacy Education (ACPE) Standard #3 Elements—Approach to Practice and Care competencies using year-end student surveys. **Methods:** The effect of cocurricular activities on professional learning were determined by utilizing year-end P1-P4 student-responses to ACPE Standard #3 element questions, comparing 3 years of no activity (baseline) vs. 2 years with cocurricular activities. A unique cocurricular activity was required each semester (without academic credit) for P1-P4 students graduation. A total of 437 cocurricular activities were offered: 2019-2021. Student’s t-tests and analysis of variance (ANOVA) compared
baseline with cocurricular data within each pharmacy year and to compare cocurricular data across academic years, respectively. Data were analyzed in R (RStudio Team, Boston, MA) with significance set at \( \alpha < 0.05 \). **Results:** The baseline population averaged 146 vs. 72.5 for the cocurricular group. The average age of the total population was 25.4 (standard deviation: 4.5), 46.5% were female, and 75.2% had prior degrees. There was a range of changes between baseline and cocurricular groups across pharmacy year: Problem Solving +2.8 to 16.4 over the 3 element questions; Education +2.7 to +12.9 over the 2 element questions; Patient Advocacy +1.8 to +10.5; Interprofessional Collaboration +3.2 to +17.1 over 2 element questions; Cultural Sensitivity +3.2 to +17.2; and Communication +1.2 to +23.2 over three element questions). Differences in cocurricular scores between pharmacy classes were statistically significant for all elements (\( p < 0.0001 \)). **Conclusions:** Student-reported competencies of ACPE Standard #3 show cocurricular activities positively impact each Approach to Practice and Care element year-to-year, but do not reach significance until exposure across all years. The data support integration of cocurricular activities to complement professional pharmacy learning.

**Attitudes and Perceptions Towards COVID-19 Vaccine Uptake Among Pharmacy Students**

Edward T. Chiyaka, Wingate University, Carrie L. Griffiths, Wingate University, J. Andrew Woods, Wingate University. **Objective:** To evaluate COVID-19 vaccine hesitancy, uptake, and perceptions among pharmacy students. **Methods:** Pharmacy students from three U.S. private pharmacy schools were invited to participate in an anonymous online survey administered using Qualtrics. We assessed their COVID-19 vaccination status, as well as the factors and reasons associated with their attitudes and perceptions towards the COVID-19 vaccine. **Results:** There were 182 respondents. Among them, 87% had received at least one dose of one of the three available COVID-19 vaccines in the USA and 13% had not been vaccinated or were vaccine hesitant. The vaccine hesitant group cited religious beliefs (30%) and vaccine side effects (61%) as reasons for not getting vaccinated. Furthermore, 65% of the hesitant group were extremely unlikely to consider taking the vaccine even if it received full approval from the Food and Drug Administration. **Conclusions:** Most pharmacy students had already received the COVID-19 vaccine, but a significant proportion had not been vaccinated citing concerns about effectiveness, side effects, and religious beliefs. Our survey indicates that the potential for enhanced educational opportunities exists throughout pharmacy curricula regarding the critical evaluation of the expanded role of pharmacists in patient care and their potential influence in improving vaccine uptake in their communities, there is a need to improve vaccine uptake among them.

**Bridging Education and Practice: Skills and Experiential Education Curricular Integration Across the Patient Care Process**

Rachel A. Allen, University of Washington, Jennifer Chang, University of Washington, Alvin Goo, University of Washington School of Pharmacy, Jasmine Mangrum, University of Washington, Sharon Wu, University of Washington, Kyle Wunderlin, University of Washington, Teresa A. O'Sullivan, University of Washington. **Objective:** Little evidence outlines how pharmacy student performance in didactic courses translates to performance in the practice setting. The objective was to complete an exploratory analysis of performance in didactic skills courses and in the experiential education (EE) setting for specific Pharmacist Patient Care Process (PPCP) domain activities in an integrated curriculum. **Methods:** The Pharmacist Provider Series integrates provider readiness through skills and EE during the first and second professional years (PY1, PY2). Wednesdays in Practice (WIP) is a longitudinal introductory practice experience providing students with early and frequent exposure to patient care. The didactic skills curriculum was designed to align with comparable WIP Entrustable Professional Activities, assessing student performance in six specific PPCP domain activities (PY1: collect, assess, plan; PY2: implement, monitor, and comprehensive). Summary measures of performance for PPCP activities were examined for the 2020-2021 academic year. **Results:** A total of 103 PY1 and 103 PY2 students completed skills and WIP PPCP-related skills activities. For didactic skills, 86% of PY1 students and 70% of PY2 students passed all PPCP activities on initial attempt and 100% of students passed after remediation. For WIP activities, 93.2% of all students met the expected entrustment level. Forty-five students performed below expectations on initial assessment of one or more PPCP skills activities and only 4 of those students also did not meet expected entrustment for the comparable WIP activity. **Conclusions:** Aligning skills training and practice activity measures allowed us to explore how student training in the curriculum related to performance at the practice site. Performance below expectations in the initial completion of didactic skills did not predict subsequent performance below entrustment at...
Building Towers from Blocks: Vertical and Horizontal Integration through an Integrative Course Series

Joelle G. Ayoub, Western University of Health Sciences College of Pharmacy, Doreen Pon, Western University of Health Sciences College of Pharmacy, Mark Nguyen, Western University of Health Sciences College of Pharmacy, Jenny Kang, Western University of Health Sciences College of Pharmacy, Anne Kugler, Western University of Health Sciences College of Pharmacy, Hyma P. Gogineni, Western University of Health Sciences College of Pharmacy, Donald Hsu, Western University of Health Sciences College of Pharmacy. Objective: Capstone courses can help ensure that students can integrate the knowledge, skills, and professional attitudes needed for progressing to advanced pharmacy practice experiences (APPEs) and often occur near the end of the didactic curriculum. We implemented a series of ‘capstone-like’ courses within our block system to encourage horizontal and vertical integration of knowledge, skills, and professional attitudes and serve as checkpoints throughout the curriculum. The objective is to describe the structure and student evaluations of this integrative course series. Methods: Three integration blocks (IBs) are interspersed throughout the didactic curriculum. At the start of each IB, a high-stakes assessment is administered to encourage review of fundamental pharmacotherapy knowledge. Complex patient cases are then used to integrate, reinforce, and assess application of knowledge and skills. Multiple types of assessments such as calculations exam, sterile compounding practicum, objective structured clinical exam, and oral case-based exam are utilized to ensure cumulative retention of key abilities. A survey was administered to Class of 2022 at the completion of the final IB to assess students’ perceptions of the effectiveness of the integrative course series. Results: 30/131 students completed the survey. Most students agreed that the IBs were effective in reinforcing knowledge and skills (97%) and helping them feel prepared for APPEs (90%). Only 73% felt confident in sterile compounding skills, most likely due to remote learning and limited opportunities for hands-on practice. Conclusions: Preparing students for practice requires integration of cumulative knowledge, skills and professional attitude. An integrative course series can help facilitate this process by requiring students to demonstrate these abilities intermittently throughout the curriculum. An integrative course series can be implemented to enhance curricular integration and help prepare students for APPEs.

Capstone Clinical Case Examination to Assess Student Readiness for Ambulatory Care Advanced Pharmacy Practice Experiences

Jarred B. Prudencio, University of Hawaii at Hilo, Deborah Taira, University of Hawaii at Hilo, Lara Gomez, University of Hawaii at Hilo. Objective: To assess the efficacy of a clinical case exam as a measure of third-year students readiness for fourth-year ambulatory care Advanced Pharmacy Practice Experiences (APPEs). Methods: This retrospective study assessed the correlation of students’ third-year clinical case exam scores with their fourth-year ambulatory care APPE scores. Data from pharmacy students in four cohorts (Classes of 2018, 2019, 2020, and 2021) were included in the analysis. Third-year students complete a capstone course in the semester prior to fourth-year APPEs. The course includes an ambulatory care section which culminates with a clinical case exam, based on common ambulatory care APPE encounters. Students complete an ambulatory care APPE during one of seven rotation blocks throughout fourth-year. Pearson’s correlation coefficients were calculated to assess if students’ third-year clinical case exam scores correlated to their performance on ambulatory care APPEs based on preceptor evaluations, to assess the exams’ effectiveness at measuring APPE-readiness. Subgroup analyses were performed for each cohort and rotation block. Results: A total of 295 students were included. Third-year clinical case exam scores were positively correlated with ambulatory care APPE scores (r=.5180, p<.001). Positive correlations were observed for each individual student cohort and for students with ambulatory care APPEs in the first five rotation blocks (p<.001). However, nonsignificant correlations were found for students with ambulatory care APPEs in the last two rotation blocks (p=.18 and p=.32, respectively). Conclusions: There was an overall positive correlation between students’ clinical case exam scores and ambulatory care APPE performance. However, this correlation was not significant for students who completed ambulatory care APPEs at the end of their APPE year. This clinical case exam can be effective at measuring third-year students’ readiness for ambulatory care APPEs.

Changes in Students’ Coping Strategies from Online Pandemic to Face-to-Face Format of a Pharmaceutics Course

Dan Cernusca, North Dakota State University, Sanku Mallik, North Dakota State University. Objective: The
major objective of this study was to explore to what degree students’ use of various coping strategies changed from the online, pandemic-constrained synchronous online format to post-pandemic face-to-face format of the course. Methods: An introductory pharmaceutics course built around integrated deep-learning active tasks was offered online in 2020 during pandemic and resumed as face-to-face in 2021. A prior knowledge and an exit surveys were administered to compare cohorts across pandemic and post-pandemic semesters to gather students’ perceived course difficulty, self-efficacy beliefs, and use of planning, growth, and social support strategies. Course performance data for the major exams were also collected and analyzed.

Results: We found no significant differences for prior knowledge (p=.75) and self-efficacy (p=0.28), but a significantly higher perceived course difficulty for post-pandemic cohort (p < .05). The use of growth and planning coping strategies were rated very high (7.1 to 7.7 on a 9-point scale) with no significant differences between the pandemic and post-pandemic groups. However, the face-to-face group, had a statistically significant higher use of social support coping strategies than the online group (p< 0.05). There were no statistically significant differences between the two groups’ performance for the comprehensive exam. Conclusions: Our findings suggest that students’ use of growth and planning coping strategies are critical for their success, independent of the course format and pandemic instructional constraints. However, the social support became more important for the face-to-face course. This can be explained on one hand by increased affordances for social interactions offered by the face-to-face environment. On the other hand, since student performance was comparable, the higher use of social support coping strategies potentially helped post-pandemic group that perceived the course as more difficult.

Choose your Own Adventure: Gamifying Diabetes, Hypertension, and Heart Failure Content
Morgan P. Stewart, The University of Texas at Austin, Kenneth Lawson, The University of Texas at Austin, Kayla Blackmon, University of Texas at Austin College of Pharmacy, Austin Buck, University of Texas at Austin College of Pharmacy, Kathryn Litten, The University of Texas at Austin. Objective: The objective of this study was to evaluate the impact of a virtually simulated unfolding case activity on pharmacy student knowledge and confidence of insulin, hypertension, and heart failure drug therapy management. Methods: Three unique Choose Your Own Adventure (CYOA) activities were created using virtual platforms for third-year pharmacy students in two different elective courses. Through use of interactive storytelling, students used critical thinking skills to make decisions in simulated patients’ care including medication initiation, titration, monitoring, and counseling. An optional, instructor-created, pre-post survey was administered to students before and after each activity to assess student satisfaction as well as change in confidence and knowledge. Results: 87 of 94 possible student responses were received (92.6%). High satisfaction scores were recorded for each item in the post-surveys. Average total scores on knowledge quizzes improved from 46.8% to 68.6% (p< 0.001). Student confidence improved (mean 2.96 vs. 3.84 on a 5-point Likert scale, p< 0.001) in all domains related to insulin, hypertension, and heart failure management. Conclusions: CYOA activities can be successfully implemented in a virtual and in-person pharmacy classroom using a digital platform. Students viewed the CYOA activity as an enjoyable and low-stakes learning tool to increase confidence in their decision making, but further research is needed to fully establish the validity of the knowledge assessments and to ensure that knowledge gains are sustainable.

Comparing Attitudes towards Poverty among Students Participating in a Poverty Simulation from 2018 to 2022
Lauren Jonkman, University of Pittsburgh, Peyton Skinker, University of Pittsburgh. Objective: To compare the impact of a novel board-game style poverty simulation on third professional year student pharmacists’ attitude towards poverty in 2018 and 2022. Methods: Third professional year students were invited to complete the Attitudes towards Poverty - short form (ATP-SF), a 21-item scale that includes three different domains including person deficiency, stigma, and structural perspective before and after participating in a faculty-run, self-developed poverty simulation in a required course in the PharmD curriculum. The pre-post data for each year was compared using Wilcoxon Signed-Rank tests. The 2018 and 2022 results were compared using Mann Whitney U test. Results: A total of 80 students (71%) completed the survey in 2018 and 86 (75%) in 2022. The baseline total ATP-SF in 2018 was 47.48±10.78 compared to 35.81±8.23 in 2022, where lower scores indicate more positive perspectives about poverty. The post-survey ATP-SF in 2018 was 45.60±11.02 (p=ns) compared to 33.1±8.48 (p< 0.0001) in 2022. Statistically significant differences were seen for all domains between 2018 and 2022. In 2018, 54.6% of students agreed the poverty simulation board game allowed them to consider the needs of patients living in poverty compared to 93% of students in 2022. Conclusions: Students in 2022 had a greater
positive baseline than students from 2018, which may be
due to the changes in societal norms following the
COVID19 pandemic and the community action against
structural racism in the summer of 2020. Overall, the cur-
rent version of the poverty simulation increased students’
attitudes towards poverty, though the effect is small.
Changes made to the poverty simulation to address sys-
temic racism may account for improvement in students’
percent agreement in the satisfaction survey response.

Comparing Interactive Case-Based E-Learning with
Paper-Based Cases in a Second Year Pharmacy
Therapeutic Liver Course

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ences College of Pharmacy, Julie R. Beauchamp, Western
University of Health Sciences, College of Pharmacy,
Tracy Moore, Western University of Health Sciences.
Objective: Pharmacy educators had to adopt unique
teaching methods to expose students to real-life clinical
cases with distant tele-educational instruction during
COVID-19 pandemic. Initiating collaboration between
pharmacy faculty and instructional designers is essential
to develop interactive Case-Based E-Learning (iCEBL).
This study investigated student’s perceptions around the
appeal, effectiveness, and efficiency of iCEBL cases com-
pared to paper-based cases. Methods: Second year stu-
dent pharmacists (n=100, 17 teams) enrolled in liver
therapeutic course were provided access to both iCEBL
module cases and paper-based cases. Participation was
voluntary and had no impact on course grade. Four liver
topics were selected for this study: acute liver failure
(ALF), alcohol use disorder (AUD), non-alcoholic fatty
liver disease (NAFLD) and cirrhosis. The content was
delivered via pre-recorded Zoom lecture one day prior to
case presentation and discussions. Instructional designers
assisted faculty using Articulate Storyline 360 software to
create iCEBL cases, which empowered students to depict
the pharmacist-role in treating patient with ALF and
AUD, while paper-based cases focused on cirrhosis and
NAFLD. Students received a voluntary survey link upon
completion of the course to evaluate the iCEBL cases
compared to paper-based cases. Results: Of 100 students,
78% completed the survey, 67% were female, and 61%
aged 25-34. Average completion time for iCEBL case was
1.23 hours verses 1.36 hours for paper-based case. Survey
results revealed that nearly 99% of respondents agreed
that iCEBL was appealing and effective in applying clin-
ical knowledge, 97% agreed that iCEBL cases kept their
interest, and were more motivated to learn compared to
paper-based cases. Conclusions: Our results support that
iCEBL is a viable option as a learning modality in
pharmacy education. Students demonstrated high satisfac-
tion and enjoyment with iCEBL module cases.

Comparison of Pharmacy Student, Evaluator and
Standardized Patient Assessment of OSCE
Performance

Ashleigh L. Barrickman, West Virginia University,
Lena M. Maynor, West Virginia University, Marina
Galvez-Peralta, West Virginia University. Objective:
Compare evaluator and standardized patient (SP) assess-
ment of communication skills in OSCEs, compare student
and SP confidence in recommendations, and identify cor-
relations between global assessment (GA) scores with stu-
dent and SP confidence in recommendations. Methods:
Students completed six OSCE stations in fall 2021. Com-
munication scores used a global assessment (GA) rubric
completed by an evaluator (either faculty or peer) and an
SP. Students and SPs also rated their confidence in the stu-
dent’s recommendation. All scores were scaled 1-5
(1=lowest; 5=highest). GA scores and confidence in rec-
ommendations were compared. Spearman correlation and
Wilcoxon matched-pairs signed rank test were used for
analysis. Results: Fifty-eight second-year and 69 third-
year pharmacy students each completed 3 OSCE stations
(6 total stations). Evaluator GA was lower than SP GA
(4.0 ± 0.8 vs 4.4 ± 0.8, p<.0001) and student confidence
was lower than SP confidence (3.3 ± 1.1 vs 4.3 ± 0.9,
p<.0001). There was a strong correlation between SP GA
and SP confidence (r=0.7; p<.0001). A very weak corre-
lation was found between student confidence and evalua-
tor GA (r=0.1, p=.02). Weak correlations were found
between perceived student confidence and SP GA
(r=0.16, p=.001), and between SP confidence and evalua-
tor GA (r=0.22, p<.0001). Conclusions: Evaluating
communication skills includes subjective perception, and
it is important to determine differences in OSCE scoring
among evaluator types. In our cohort, SPs generally
assigned higher communication scores than evaluators.
The high correlation between SP GA and SP confidence
suggests that SP confidence in student recommendations
may be related to SP perception of student communication
skills. These possible differences should be considered
when determining who will be used to evaluate high-
stakes OSCE and the impacts of evaluator perception on
student assessment.

Correlation of Pharmacy Admissions Criteria to
Student Progression Markers

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Monroe, Laurel Sampognaro, The University of Louisiana
at Monroe, Jeffery Evans, The University of Louisiana at
Objective: To identify students at risk for non-success in the Doctor of Pharmacy program (program) and inform pre-emptive interventions against nonprogression. Methods: Admission criteria and progression markers were collected for four consecutive pharmacy classes. Admission criteria included composite PCAT scores, pre-pharmacy math and science grade point average (GPA), pre-pharmacy prerequisite GPA, and cumulative undergraduate GPA. Progression markers included remediating any course, failing any course, entering modified progression, or dismissal from the program. Logistic regression was used to compare admission criteria to progression markers. Results: Cumulative undergraduate GPA was associated with being dismissed from the program, with a 32.7% relative reduction in likelihood of being dismissed for each 0.1 GPA points (OR 0.673, 95% CI: 0.459-0.985). PCAT score was also associated with likelihood of being dismissed from the program (OR 0.945, 95% CI: 0.907-0.985), and with incidences of course remediation and failure (OR 0.969, 95% CI: 0.951-0.987 and OR 0.976, 95% CI: 0.958-0.994). This difference disappeared when only therapeutics courses were considered. Admission GPA below preferred was statistically significant for dismissal from the program for all three GPA measurements. Conclusions: Admission GPA and PCAT scores seem to have a minimal impact on success in the PharmD program except for GPA below preferred. More research is needed to predict nonsuccess in therapeutics courses.

Creating a Win-Win: A Novel Layered Learning Approach for Assessing First-Year Pharmacy Students’ Communication Skills

Jennie H. Do, University of Washington, Jennifer Chang, University of Washington, Leigh Ann Mike, University of Washington, Seohyun (Claudia) Choi, University of Washington. Objective: To evaluate the impact of a longitudinal layered learning assessment experience in which PGY1 pharmacy residents evaluate communication skills and provide individualized feedback to first-year pharmacy students. Methods: Individualized assessment of student performance using predefined criteria is essential to ensure practice readiness. The Pharmacist Provider Series develop these essential skills over 7 consecutive quarters. Near the end of each quarter, each student’s core skills are individually assessed through capstone activities. Residents in our School’s Teaching Certificate in Pharmacy Education Program participated in a year-long layered learning assessment experience to assess first-year pharmacy students’ communication skills during the capstones. Experienced faculty supported residents through a pre-capstone training, direct observation and feedback during the capstone, and a post-capstone reflection and debrief. Residents completed a mid-point survey to self-rate their improvement in evaluating students and providing feedback using pre-defined criteria. Results: To date, 11 residents have participated in assessing and providing feedback to 151 students over 2 quarters [average of 75 students per quarter (69% of class)]. Ten participants completed the mid-point survey. All respondents indicated improvement in their ability to evaluate and provide feedback to students (scores were 4 or 5 on a scale from 1-5 across both measures; 1 = not at all to 5 = very well). Residents reported the pre-defined criteria helped them focus their assessment and provide more constructive and actionable feedback. Multiple opportunities to practice and faculty feedback on their performance increased their confidence. Conclusions: The design of this novel layered learning approach increased residents’ confidence and ability to provide criteria-based assessment and feedback to first year pharmacy students. Faculty benefitted from a consistent and reliable group of trained evaluators to assess the majority of the students.

Description and Evaluation of Graduating Students’ Perceptions of a Pharmacy Residency Curricular Track Program

Emily Bryant, Advocate Aurora Health, Aurora Metro Inc, Sarah Peppard, Concordia University Wisconsin, Hazel Morgen, Concordia University Wisconsin. Objective: To describe pharmacy residency pathway curricular track design, student perceived-value and report match results. Methods: The Residency Pathway was designed to prepare students in the P3 and P4 years to be competitive Postgraduate Year 1 (PGY-1) candidates and successful pharmacy residents. The Residency Pathway provides students’ opportunities to develop and refine skills needed to succeed in a pharmacy residency program through focused elective coursework, longitudinal practice-based scholarship, personal advising, professional development, and coordinated experiential learning experiences. All students were asked to complete a survey upon successful completion of the pathway in spring of their P4 year. Data were collected anonymously via Qualtrics. Results: 18 students completed the residency pathway requirements upon graduation in 2020 and 2021. Of these, 17 (94.4%) completed the post-pathway survey. The CV and letter of intent review were rated as the most valuable elements of the pathway (17 (100%) 16 (95.1%), respectively). The project experience and attendance at a residency prep session were rated as extremely valuable by 15 (88.2%) and
Developing a Qualitative Approach to Assess Partnerships using the Five Pillars of Global Health Engagement

Gina M. Prescott, University at Buffalo, The State University of New York; Jeanine P. Abrons, The University of Iowa; Rustin D. Crutchley, Washington State University; Lisa T. Hong, Loma Linda University; See-Won Seo, Albany College of Pharmacy and Health Sciences; Elizabeth Unni, Touro College of Pharmacy-New York; Lauren Jonkman, University of Pittsburgh. Objective: To identify and evaluate important factors for successful global health partnerships based on the five pillars of global health engagement. Methods: The AACP Global Education SIG outreach committee is comprised of eleven faculty from different pharmacy institutions across the US. The SIG identified a lack of evidence-based resources for colleges that would like to enter into global partnerships. The committee conducted a literature search and met monthly to develop questions centered around the five pillars of global health engagement. Results: The final semi-structured, interview guide contains 22 questions under five categories: general principles (1 question), overall process (3 questions), student placements (11 questions), staff-faculty exchange (3 questions), and assessment (5 questions). Of the 22 questions, 18 mapped to the pillar of sustainability, 21 to shared leadership, 20 to mutually beneficial partnerships, 18 to local needs-based care, and 21 to host-driven education. Conclusions: International global health partners have valuable insights into partnership development with institutions in the US. Using this developed framework to engage international partners will provide key information on what is important from the perspective of our international partners and facilitate mutually beneficial partnerships. Next steps include partnering with the International Pharmaceutical Federation educator workgroup to identify international partners from each of the five geographic regions of the world and conduct semi-structured interviews for qualitative analysis.

Development and Implementation of a Successful 400-person Virtual IPE Activity about Social Determinants of Health

Tyler M. Kiles, The University of Tennessee Health Science Center College of Pharmacy, Chelsea Renfro, The University of Tennessee Health Science Center College of Pharmacy. Objective: The objective of this project is to describe the development and implementation of a large virtual interprofessional education (IPE) activity to explore the social determinants of health. Methods: A patient case was previously designed as an in-person IPE activity for pharmacy, medicine, physician assistant, and social work students. The complex case incorporated interdisciplinary rounding in the hospital, as well as home visit and follow-up care. The original case was developed over the course of a semester with feedback and input from faculty in each program. The case was transformed into an unfolding clinical scenario and built into an interactive online format using QuestionPro. The case was further amended with stakeholder input. The virtual IPE was aligned with curricular insight from faculty and was scheduled for a 2-hour time block, 3 months in advance. Students were invited to complete the Interprofessional Education Collaborative (IPEC) Competency Self-Assessment Tool before and after the activity. Results: Over four hundred students from colleges and programs across the state of TN participated in this activity simultaneously. Upperclassmen led interdisciplinary groups of 10-12 students through the 45-min scenario in breakout rooms using a facilitation guide, and faculty representatives from each college facilitated 2 separate large 30-min debrief discussions. Students reported an increased understanding of the social determinants of health, as well as increased competency in all IPEC domains. Conclusions: Scheduling, geographic, and classroom constraints are common barriers for interprofessional education. The design of effective IPE activities such as these may alleviate these barriers and allowed for increased participation from other disciplines.
Development of a Combination Didactic-Experiential Clinical Research Course Series

Lindsey E. Dayer, University of Arkansas for Medical Sciences, Jacob T. Painter, University of Arkansas for Medical Sciences. **Objective:** The objective was the development of a combination didactic-experiential clinical research course series for student pharmacists. **Methods:** The research course series was offered to third-year Doctor of Pharmacy Students at the University of Arkansas for Medical Sciences College of Pharmacy. This didactic course is two credit hours offered during the spring semester. Throughout the semester, students identify a clinical problem, develop a research question, form specific aims to address the question, and design a research study and analytic plan to accomplish the aims. The culmination of the class is an Institutional Review Board protocol suitable for submission. Students then can enroll in a four-week advanced pharmacy practice experience during their 4th professional year to continue their project. **Results:** The first offering of this course was the Spring semester 2018. Since then, 17 students have taken the didactic portion of the course series (forming nine groups). Nine of these students completed the experiential portion of the series. Fourteen students have presented their research at a pharmacy conference with 13 of those being a national pharmacy conference. Sixteen students graduated with honors in research after completing this program. Of the nine individual projects developed, three manuscripts have been published, one is submitted, and three are in preparation for submission. **Conclusions:** This course was successful in allowing students the opportunity to complete a research project and present their work to their peers. Many participants were also able to publish the results of their work. The course series also allowed students to earn graduation honors in research.

Development of a Required APPE Readiness Course Series in a Doctor of Pharmacy Curriculum

Quintin Broussard, Keck Graduate Institute, Gail Orum, Keck Graduate Institute, Minh Dang, Keck Graduate Institute. **Objective:** Didactic preparation of Doctor of Pharmacy (PharmD) students is essential for experiential practice. ACPE Standards 2016 describe the need to teach PharmD students knowledge and skills to be ready to ADVANCED PHARMACY PRACTICE EXPERIENCES (APPEs); however, limited literature describes how this is completed and assessed at different PharmD programs [Currents in Pharmacy Teaching and Learning 2020;12(7):771-5]. The purpose of this project is to describe the implementation of a newly-required APPE Readiness course series taught before APPEs to third-year PharmD students. **Methods:** The APPE Readiness courses were two newly-required 1.5 credit hour 16-week third-year PharmD courses at Keck Graduate Institute. The courses contained knowledge and skills necessary for students to succeed on APPEs, including oral journal club presentations, written and oral presentations of inpatient and outpatient patient cases, professionalism, and calculations and law reviews. Students were assessed by standardized grading rubrics for written/oral journal club presentations and patient presentation-based objective structured clinical examinations (OSCE), containing disease states from previous/current courses the students took, and a final examination containing course materials and disease state topics seen commonly in clinical practice. Towards completion of the second APPE Readiness course, students were assessed with the Pre-NAPLEX. **Results:** The APPE Readiness course series was implemented at Keck Graduate Institute from August 2020 to May 2021. Averages of each course OSCE were 86.88% and 84.17% respectively. Final examination averages were 79.18% and 78.03% respectively. The average Pre-NAPLEX scaled score was 74.02. **Conclusions:** Students in the APPE Readiness course series demonstrated proficiency in both pharmacy knowledge and skills needed for APPE Readiness. Further research is needed to determine if there is any correlation between APPE Readiness course series performance, APPE performance, and board performance.

Development of an Assessment Tool for Public Health Emergency Preparedness and Response Education

Julie Kalabalik-Hoganson, Fairleigh Dickinson University, Abby A. Kahaleh, Roosevelt University, Rebecca Brynjulson, North Dakota State University, Jeanine P. Abrons, The University of Iowa, Georges Adunlin, Stanford University, Hoai-an Truong, University of Maryland Eastern Shore. **Objective:** To describe the process of development of an emergency preparedness and response education (EPREP) national survey and its validation process. **Methods:** The Emergency Preparedness and Response Committee of the AACP Public Health Special Interest Group developed a survey instrument to close the knowledge gap in the literature regarding EPREP. A 16-item survey was developed and assessed for face and content validity. Institutional Review Board approval was obtained from all institutions. The online survey was built in QualtricsXM. Consistent with the consent form, the responses will be collected anonymously and analyzed in aggregate form. The pilot questionnaire was sent to 12 volunteers. **Results:** The first section of the survey includes questions about faculty involved in EPREP, collaborations
with health profession programs, and resources needed for future EPREP. The second section focuses on the types of EPREP assessments. The third section examines collaborations with public health organizations and stakeholders. The last section highlights advocacy initiatives for public health in pharmacy education. The survey includes demographic questions about the respondents’ education, training, type of institution, and class size. The response rate to the pilot questionnaire was 9/12 (75%). All respondents indicated the survey was easy to navigate, instructions were clear, and questions were concise and easy to answer. The survey was modified based on the results of the pilot questionnaire to increase font size and include additional answer options. Conclusions: The preliminary data revealed the survey instrument is user-friendly. Items are clear and easy to answer. The survey instrument may be beneficial to future researchers to integrate EPREP in their pharmacy curricula.

Development of Co-Curricular Impact Scale for Students to Assess Personal/Professional Benefit of Event Participation

Kelly Bach, Albany College of Pharmacy and Health Sciences, Megan Veselov, Albany College of Pharmacy and Health Sciences, Laurie L. Briceland, Albany College of Pharmacy and Health Sciences. Objectives: Pharmacist-in-Training (PhIT) Portfolio tracks progress with personal and professional co-curricular development. Previously, students provided written reflection upon co-curricular participation; faculty advisors reviewed reflections, though did so sporadically. The objective was to implement a streamlined method of assessment by engaging students in completion of an Impact Scale (IS) to document student impressions of co-curricular events recorded in PhIT. Methods: The PhIT Portfolio is comprised of 5 domains: 1) Professional Development/Education; 2) Patient Care Service; 3) Legislative Advocacy; 4) Leadership/Service to the Pharmacy Profession; and 5) Healthcare-related Community Service. For the IS, 16 questions were developed and mapped to 10 CAPE outcomes and included impact of authentic learning experience, collaboration with healthcare professionals, and preparation for APPPeS and pharmacist roles. P1 – P3 students rated the impact of participation in 5 co-curricular events using ratings of Low, Moderate, Significant Impact, or Not Applicable. Results: Of 502 co-curricular events across five PhIT Portfolio domains, and of 16 IS questions rated, the most impactful per PhIT domain were: “Activity immersed me in an authentic learning experience”: domains 1 (97%) and 3 (95%) ≥ Moderate Impact; “Activity improved my self-confidence in providing patient care, advocacy, community service and/or leadership/service to the profession of pharmacy”: domains 5 (81%) and 2 (100%) ≥ Moderate Impact; and “Activity broadened my perspectives in professionalism, altruism, accountability and/or integrity”: domain 4 (97%) ≥ Moderate Impact. Conclusions: The IS proved to be an efficient and effective means of collating impact of co-curricular involvement upon student development. Additional data can be assessed for class years, specific co-curricular events, and CAPE mapping/PhIT domains to determine impact on students and co-curriculum gaps.

Does your Computer have High Blood Pressure?

Jana Murry, MCPHS University-Boston, Nancy Stern, MCPHS University, Boston, Nikhil Sangave, MCPHS University, Boston, Urvinder Kaur, MCPHS University, Boston. Objective: The COVID-19 pandemic required pharmacy students to transition to virtual classrooms. The objective was to create a way for 230 students to complete a cardiology practice module. Methods: The simulation team recorded videos of both proper and improper BP and HR techniques to bridge some of these gaps. In small groups, students were given recorded videos to identify inappropriate techniques, counsel on appropriate dietary, exercise, and medication recommendations for hypertension management. Finally, students were given virtual scenarios to examine and identify BP. The virtual scenarios were designed to teach students the fundamentals of cardiology physical assessment skills. This endeavor required a coordination of both visual and audio tools to achieve an appropriate outcome to accurately assess a student’s ability to measure BP. Our goals were a realistic appearance of a sphygmomanometer, inflation and deflation (sound and visual cues with resistance) and heart sounds (Korotkoff sounds). A video/quiz was created, with the help of a graphic designer, for students to practice at home and be assessed on these scenarios in a live virtual format. Results: Students that practiced all three scenarios online saw nominal increases in average scores. Only 28% of the students completed three scenarios. Low participation rates may be due to increased exposure to similar practice scenarios in mandatory pre-labs and lectures. Conclusions: The simulation team was pleased with how seamless the scenarios integrated into the virtual cardiology module and how well the scenarios were accepted by the students and faculty. These scenarios were built to show students what a BP would look like using a sphygmomanometer in order to prepare themselves for rotations. Students received an interactive, team-based experience by utilizing videos and online modules.
Embedding DEAI in Student Pharmacist Professional Development

Dr. B. Ginsburg, The University of Texas at Austin, Skyller Walkes, The University of Texas at Austin College of Pharmacy. Objective: Formalized programs on diversity, equity, access, and inclusion (DEAI) are an essential part of the professional development of student pharmacists. We identified challenges and opportunities for initiating programs addressing DEAI inclusion in schools and colleges of pharmacy. The authors developed and implemented a longitudinal program to grow student pharmacist programs focused on DEAI. The program’s impact on learner’s knowledge, comprehension, and application of DEAI themes within Foundations of Professional Development (FPD) on career development and planning, professionalism, leadership, and self-awareness is assessed throughout the program. Methods: DEAI themes have been integrated into FPD at our institution. FPD sequence is based on five interdependent pillars: self-discovery, professionalism, leadership, career development and planning, and contemporary issues in healthcare. The recently integrated sixth pillar intentionally highlights DEAI themes as foundational concepts embedded within the other five pillars. A scaffolded thematic integration approach across FPD allows for cohorts to be assessed longitudinally to demonstrate the impact on DEAI awareness and activation as healthcare practitioners. Results: Students are summatively assessed during the P4 year through questions that explicitly evaluate the role of DEAI inclusive excellence as an integrated pillar in the students’ behavior and intentional inclusion into their professional development as healthcare practitioners. Questions are embedded in P4 APPE rotations, graduating surveys, and reflection assignments to evaluate impact of the program on student development. Conclusions: Assessment is as important as the DEAI content integration to effectively document the growth in students’ knowledge, comprehension, and application of themes on career development and planning, professionalism, leadership, and self-awareness. In addition to assessing the efficacy of cultural understanding, cultural consciousness, and cultural safety, assessment identifies deficits in the curriculum and informs opportunities for pedagogical growth.

Engaging Student Pharmacists in Social Determinants of Health through Photovoice

Lauren Jonkman, University of Pittsburgh, Sharon E. Connor, University of Pittsburgh, Nancy Borja-Hart, The University of Tennessee, Gina M. Prescott, University at Buffalo, The State University of New York, Sally Haack, Drake University, Jeanine P. Abrons, The University of Iowa, Jaime Maerten-Rivera, University at Buffalo, The State University of New York. Objective: To evaluate the impact of an interactive photovoice activity on perceptions of social determinants of health (SDOH) and health equity among first-professional year student pharmacists. Methods: Students at three institutions (Drake University, University of Buffalo, University of Pittsburgh) were required to complete a standardized educational intervention using a photovoice activity, lecture, and discussion. A voluntary pre/post survey was administered via Qualtrics to assess students’ perceptions of SDOH, health equity, and health disparities using the Perceptions of Social Determinants of Health and Health Equity survey (18-items, Likert scale). Matched survey responses were compared between individual students using Wilcoxon signed-rank and corresponding measures of effect. Statistical significance was defined as P < 0.05. Results: A total of 191 (73%) students had matchable pre- and post-survey responses. Statistically significant improvement was found for items that defined equity, diversity, and inclusion (4 items, P < 0.001), beliefs on political polarization of healthcare (2 items, P < 0.05), beliefs on impact of society on healthcare (2 items, P < 0.05), and comfort discussing equity, diversity, and inclusion (2 items, P < 0.001). The eight items that were not statistically significant had very small effect sizes and included structural racism and discrimination (d < 0.2). Conclusions: Student perception of the basic terminologies and impact of beliefs on healthcare improved after the photovoice assignment. However, those on structural racism and discrimination did not show significant improvement; this may be due to the need for additional teaching or refinement in the health equity survey instrument. There are limited instruments to capture health equity perceptions of students. This tool, previously administered to college undergraduates at a public university, may not be the best survey instrument to assess the effectiveness of this unique intervention.

Enhancing Pharmacy Student Perceived Knowledge, Confidence, and Attitudes in Providing Care to the LGBTQIA+ Community

Laura A. Hart, University of California, San Diego, Alex J. Luli, University of California, San Diego, Panteha Kelly, University of California, San Diego, Christina L. Mnatzaganian, University of California, San Diego. Objective: To evaluate the impact of a new lecture in the first-year (P1) Doctor of Pharmacy curriculum on student knowledge, confidence, and attitudes in providing inclusive care to the lesbian, gay, bisexual, transgender, queer or questioning, intersex, asexual, plus (LGBTQIA+) community. Methods: A new 1-hour lecture was implemented...
in a foundational self-care course for P1 students in the 2021-2022 academic year. The goal of this lecture was to introduce providing inclusive care to the LGBTQIA+ community. The lecture addressed pertinent background (e.g., health disparities, barriers to care), terminology, inclusive communication strategies, and allyship. Active learning was incorporated via case vignettes and discussion. An online, anonymous retrospective pre-post survey was administered to students following the lecture to assess knowledge, confidence, and attitudes before and after the lecture. Survey questions used a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). The Wilcoxon signed-rank test compared survey responses pre- and post-lecture. Results: Sixty-four students (88.9%) completed the survey. Students’ perceived knowledge of relevant terminology significantly increased for all terms evaluated (p < 0.05). Students’ confidence significantly increased in using inclusive communication strategies, being an ally, and providing care to the LGBTQIA+ community (p < 0.001). Further, the lecture significantly enhanced students’ beliefs in the importance of sharing pronouns and being an ally (p < 0.001). Additionally, 89.1% of students strongly agreed or agreed the lecture content was relevant to their future practice. Conclusions: A 1-hour lecture enhanced P1 student perceived knowledge, confidence, and attitudes in providing care to the LGBTQIA+ community, with most students reporting relevance of content to their future practice. Other schools of pharmacy without dedicated curricular content in this area may benefit from implementing a similar lecture.

Evaluate Students’ Perception of Game Based Lab Activity

Damien R. Fisher, South University, Lilia Z. Macias-Moriarity, South University, Genelle Singelton, South University, Austin R. Dew, South University, Ilesha R. Gonder, South University, Sulamieth Ayuk, South University, Kenyanna Parrish, South University. Objective: To describe the results of implementing a 4-day student course schedule. Methods: Students in the Classes of 2023 and 2024 and all faculty course coordinators were surveyed in Fall 2021 regarding their experience with a 4-day course schedule and their preference for continuing with this structure. Quantitative and qualitative survey data were obtained. Descriptive statistics were used to analyze quantitative responses, while thematic analysis was used for open-response questions. Results: Students (n = 109; response rate 63.4%) reported the benefits of a 4-day course schedule were that it allowed more time studying/preparing for classes (68.8%) and for wellness and self-care activities (20.1%). Students overwhelmingly preferred to continue with the 4-day course schedule (97%). Qualitative results showed students reported increased engagement (47.8%), improved course structure (46.7%), and improved well-being (37%). Students disliked the longer days in class (19.1%) and the structure (29.2%), however, 37.1% of commenters stated there was nothing they
disliked with the 4-day schedule. Faculty responded (n=31; response rate 79.5%) that the 4-day course schedule positively impacted (48.4%) or had no impact (41.9%) on their job responsibilities or work-life balance. Work-life balance was the area most frequently cited by faculty (86.7%) as being positively impacted by the 4-day course schedule. Only 9.7% of faculty responding preferred a 5-day course schedule. **Conclusions:** This program is the first of its kind to present how implementation of a 4-day course schedule impacted faculty and students at a school of pharmacy. Other institutions may wish to adopt a similar course scheduling approach.

**Evaluating the Impact of a Change to a Virtual Interprofessional Education Poverty Simulation**

Brittney A. Meyer, South Dakota State University; Alyssa Zweifel, South Dakota State University; Margaret F. Germundson, South Dakota State University. **Objective:** To compare an in-person versus virtual interprofessional education poverty simulation on changes in pharmacy and nursing students’ attitudes towards poverty. **Methods:** First-year pharmacy and fourth-semester nursing students participated in the Missouri Association for Community Action (MACA) Poverty Simulation in January 2020 (2-hour simulation; 1-hour faculty-led debrief). That fall, students completed a free online poverty simulation with similar objectives independently then participated in a 1-hour faculty-led group videoconference debrief. Students completed self-administered web-based pre- and post-surveys examining attitudes towards poverty for each (13 questions rated 1-3; higher value indicating better understanding). **Results:** Two-way ANOVA test and descriptive statistics were utilized to analyze the following responses: Group 1 In-person pre-n = 138 and post-n = 63; Group 2 virtual pre-n = 110 and post-n = 84. Group 1 showed a significant improvement in mean score with an overall change of 3.52 points from pre to post simulation. Group 2 had a statistically significant improvement also of 3.17 points. While a significant difference between the mean total score of Group 1 and 2 existed, there was no significant interaction between the Groups (1 and 2) and Times (pre and post) meaning each simulation had a similar impact though the scores were different pre and post. Using descriptive statistics, some differences in groups for individual questions were noted. Both simulations decreased the number of “Do not know” and “Do not understand the statement” answers post-simulation. **Conclusions:** Delivery of an interprofessional poverty simulation, either virtually or in-person, positively impacted students’ perceptions of poverty which can help achieve the Cultural Sensitivity and Patient Advocacy subdomains of the CAPE outcomes. With both experiences providing similar impact, which offering to provide can be determined through consideration of additional factors (student and faculty time, cost).

**Evaluating the Impact of Transitioning to Remote Learning on Student Performance in a Pharmacotherapeutics Course**

Melissa Noble, University of South Florida, Joseph Fernandini, University of South Florida, Bao Anh Tran, University of South Florida. **Objective:** To assess the impact of remote learning during the COVID-19 pandemic on pharmacy student performance on formative and summative assessments in the Pharmacotherapeutics IV (PTX4) course. **Methods:** In mid-March 2020, PTX4 was transitioned to online learning due to the COVID-19 pandemic. Prior to this, students were administered live, proctored exams in the course via ExamSoft. During the Spring 2021 semester, PTX4 was fully delivered through remote instruction. Exams continued to be delivered via ExamSoft except without a live proctor during remote instruction. Otherwise, content covered and assessment structure remained the same across all three years. Student performance on course assessments, including exams, verbal defenses, SOAP notes, and in-class cases, was compared between 2019, 2020, and 2021. **Results:** There were 98 students enrolled in PTX4 in 2019, 92 in 2020, and 100 in 2021. The overall exam average (79.5 vs 82.7 vs 86.7, p < 0.0001) and averages on each of the four exams (p < 0.0001 for all) were both statistically significantly different between the years and higher in 2020 and 2021. Verbal defense grades were significantly higher in 2020 compared to 2021 (84.3 vs 79.7, p = 0.01). Performance on SOAP notes was also statistically significantly different between cohorts but without a clear trend (79.8 vs 83.7 vs 76.6, p < 0.0001). Students performed better on in-class cases in 2020 and 2021 (79.3 vs 86.2 vs 85.4, p < 0.0001). The course grade also was higher in 2020 and 2021 compared to 2019 (83.2 vs 85.8 vs 85.6, p < 0.0001). **Conclusions:** Study results suggest student performance was not negatively impacted by remote learning as overall course grades and a majority of the assessment grades were higher in 2020 and 2021 in PTX4.

**Evaluation of Advanced Topics in Diabetes Elective on Student Perception of Pre-APPE Readiness**

Ha Phan, The University of Mississippi, Courtney Davis, University of Mississippi, Laurie Fleming, University of Mississippi. **Objective:** To evaluate the impact of a uniquely structured, semester-long, advanced diabetes elective on student perceptions of their ability to perform Pre-APPE Core Domains and relevant Entrustable
Professional Activities (EPAs). **Methods:** Twenty third-year students were enrolled in an advanced diabetes elective that met for two hours each week and incorporated pre-class lectures, pre-class assignments, student-led journal club presentations, in-class active learning with deliverables, role-play patient counseling, non-traditional take-home midpoint exam, and an endpoint OSCE-like assessment. Students were invited to participate in a pre-survey that assessed their previous pharmacy-related work experience, along with baseline perceptions of ability to perform the Pre-APPE Core Domains and relevant EPAs. They were also invited to complete a post-survey that assessed their current perceptions of their ability to perform the Pre-APPE Core Domains and relevant EPAs. **Results:** Twenty students completed the pre-survey and twelve students (60%) completed both pre and post-surveys. Seventeen (85%) of the students indicated previous work experience with 40% indicating 1-2 years of work experience. More than 40% of students had a positive change in perceptions of ability to perform the Pre-APPE Core Domains and relevant EPAs with 67% expressing a positive change in preparedness to identify, assess, and resolve drug-related problems and applying the principles of health and wellness when providing individual and population-based health and wellness information. Students expressed a positive change in preparedness to establish patient-centered goals and creating care plans. **Conclusions:** The uniquely structured elective may have contributed to student improved perceptions of ability to perform Pre-APPE Core Domains and relevant EPAs. More data and future studies may explore other areas in the third-year curriculum that may contribute to improvement in APPE preparedness.

**Evaluation of an Introduction to Interprofessionalism Event**

Bernadette R. Cornelison, The University of Arizona, Margie Arnett, University of Arizona Center for Transformative Healthcare, Lynne Tomasa, University of Arizona College of Medicine. **Objective:** To evaluate student understanding of scopes of practice and collaborative teamwork after the “Introduction to Interprofessionalism” event. **Methods:** The University of Arizona Colleges of Medicine, Pharmacy, Nursing, and Public Health students attended a 2-hour event that focused on roles, scopes of practice and the impact of collaborative care on patient outcomes. Students completed a 30-question pre-event survey that assessed their knowledge of team behaviors terminology, perspectives on shared learning experiences, and educational training. A 44-question post-event survey assessed the event effectiveness, student engagement and satisfaction. **Results:** There were 457 students (26% medicine, 31% pharmacy, 41% nursing, and 1% public health) that completed the pre-survey and 419 students (25% medicine, 31% pharmacy, 43% nursing, and 1% public health) completed the post-survey. Students strongly agreed that shared learning improves communication among health care providers (55%), and helps them become a more effective member of a team (52%). Students were less sure that shared learning would decrease disruptive behaviors within teams (38%), prevent burnout (35%), or lower costs of care for patients (30%). Students rated the scope of practice checklist, disruptive/constructive behaviors table, and the panel discussion as the most useful in learning about each other’s professions. Overall, 54% of the students were very to extremely satisfied with the event and felt that the activities were very to extremely relevant to their current profession (83%). The students were very to extremely engaged in the activity and/or discussion (61%). The students (77%) rated the activity as good to excellent. **Conclusions:** The University of Arizona Health Sciences’ “Introduction to Interprofessionalism” event can improve student understanding of professional scopes of practice and collaborative teamwork.

**Evaluation of LGBTQ+ Cultural Competence Among Student Pharmacists**

Elisabeth D. Clark, Auburn University Harrison College of Pharmacy, Kevin N. Astle, Auburn University, Zeke Bellomy, Auburn University Harrison College of Pharmacy, Evie Hackney, Auburn University Harrison College of Pharmacy. **Objective:** The objective of this project was to evaluate the level of inclusion of LGBTQ+ health content in the pharmacy curriculum in ACPE-accredited programs across the United States as well as to assess the clinical confidence and knowledge in providing care for LGBTQ+ patients among student pharmacists. **Research Question-** Within pharmacy students across the United States, is there an association between the level of education and clinical experience in caring for LGBTQ+ populations compared to clinical confidence and knowledge of providing care for sexual and gender minorities? **Methods:** A Qualtrics survey was distributed to Associate Deans for Student Affairs who had accurate contact information available online at all the accredited Schools/Colleges of Pharmacy in the United States. The associate deans were asked to distribute the survey to all students in the PharmD program for completion. The survey was available from January 7, 2022 to March 1, 2022. The survey consisted of demographic information as well as the “Lesbian, Gay, Bisexual, and Transgender Development of Clinical Skills Scale (LGBT-DOCSS),” a validated...
instrument for assessing attitudes, knowledge, clinical confidence of providing care for LGBTQ+ patients. 

Results: In progress. Conclusions: In progress

Evaluation of Nephrology Content in Doctor of Pharmacy Curricula Across United States Pharmacy Schools

Soo Min Jang, Loma Linda University, Emily Ashjian, University of Michigan, Katherine Cho, Temple University. Objective: Pharmacists improve outcomes in the care of patients with kidney diseases and are an integral member of the multidisciplinary team. There is guidance for curricular design for Doctor of Pharmacy programs, but pharmacist training within nephrology at degree completion is not well characterized. Methods: This prospective, cross-sectional, descriptive study assessed current practices and trends in nephrology education within Doctor of Pharmacy curricula at accredited schools in the United States through an electronic survey. Results: Sixty-one institutions responded, accounting for 44% of all ACPE-accredited programs. Most respondents were clinical faculty, who had completed residency training and board certification. Variation was found in the amount of time allotted for the teaching of nephrology topics in pharmacy curricula and the types of experiential training offered. Kidney-related topics were taught in required courses only (n=52; 85%) or in both required and elective courses (n=9; 15%). The greatest amount of time was allotted to fluid/electrolytes (4.62±3.04 hours), acid/base disturbances (2.85±1.87 hours) and solid organ transplantation (2.64±2.28 hours). Dedicated time within required coursework was least frequently reported for kidney stones (41%) and disparities in kidney care (41%). Twenty-one survey respondents (34%) reported offering a nephrology-focused advanced pharmacy practice experience (APPE). The respondents could select multiple APPE settings: acute care (n=14), ambulatory care (n=12), hemodialysis (n=12), and/or kidney transplant (n=10). Conclusions: Given the complex interplay between kidney disease and other health conditions, the increasing incidence and prevalence of kidney disease, and demand for pharmacist involvement in the care of patients with kidney diseases, curricular revisions may be necessary to ensure practice-ready pharmacists in nephrology.

Evaluation of Pharmacy Students’ Experience in COVID-19 Vaccination Clinics

Gina M. Prescott, University at Buffalo, The State University of New York, May Thandar, University at Buffalo School of Pharmacy & Pharmaceutical Sciences, Jaime Maerten-Rivera, University at Buffalo, The State University of New York, William A. Prescott, University at Buffalo, The State University of New York, Karl Fiebelkorn, University at Buffalo, The State University of New York, Nicholas M. Fusco, University at Buffalo, The State University of New York. Objective: To examine the impact of participation in COVID-19 vaccination clinics on students’ self-assessed ability to vaccinate and secondarily, to examine the impact these experiences had on student perspectives of pharmacist engagement in public health. It was hypothesized that participation would increase students’ self-assessed ability to vaccinate and would positively affect attitudes toward pharmacist engagement in public health. Methods: First- through fourth-year students were invited to participate in COVID-19 vaccination clinics during Spring 2021. Following participation, students were invited to complete an anonymous, electronic survey consisting of items related to vaccination (14-items) and pharmacist engagement in public health (6-items). The vaccination section included 3 items on patient intake/education, 8 items on clinical process, and 3 items on records procedures. Students were asked to rate each item using a seven-point Likert scale (1= strongly disagree to 7= strongly agree) in a retrospective pre/post-experience format. Data were compared with paired-sample t-tests and corresponding measures of effect size. Results: A total of 70/92 students (response-rate = 76%) completed the survey. Each of the 14-items pertaining to students’ self-assessed ability to vaccinate increased (p<.001), with effect sizes ranging from medium to large. Each of the 6-items pertaining to student attitudes toward pharmacist engagement in public health increased (p<.005), with effect sizes ranging from small to medium. Students indicated experiences were valuable (M=6.61, SD=0.71), that participation increased their comfort level with vaccination (M=6.63, SD=0.76), and that they were better prepared to engage in vaccination following engagement (M=6.69, SD=0.65). Conclusions: Participation in COVID-19 vaccination clinics had a positive effect on students’ self-efficacy toward vaccination and their attitudes on pharmacist engagement in public health. Colleges/schools of pharmacy should offer opportunities like this to their student-pharmacists to facilitate their professional development.

Evidence-Based Medicine and Pharmacotherapy Instructional Alignment

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Objective: To assess the impact of instructional alignment for evidence-based medicine (EBM) and pharmacotherapy coursework on student application of concepts in clinical decision-making. Methods: Instructional alignment included assignment of six landmark literature articles in EBM coursework. The articles were identified by pharmacotherapy instructors as ‘landmark’ to management of associated diseases in the aligned pharmacotherapy semester. The articles were the basis for quizzes over skills taught in the EBM course and were referenced during pharmacotherapy didactic lectures. Students completed surveys following each article. A post-semester survey assessed student perceptions of alignment and impact on clinical decision-making, and pharmacotherapy exam performance pre- and post-alignment was assessed. The study was deemed exempt by the IRB. Results: Most students agreed the value of skills gained was proportional to the time spent reviewing the articles (79%) and instructional alignment should continue (>90%). Comfort applying EBM analysis to primary literature increased significantly between the first and final assignments with 6.7% and 71.7% (p < 0.05) of students self-reporting confidence >8 on a 1-to-10 scale, respectively. Most students (73%) agreed understanding why particular treatments are used for specific disease states was enhanced due to alignment compared to a previous semester of pharmacotherapy without alignment. During the alignment semester students were more likely to cite specific guidelines and/or primary literature to rationalize pharmacotherapeutic plans on exams (54%) compared to a pre-alignment period (34%, p < 0.05). Overall pharmacotherapy case performance and plan rationale scores were significantly higher in the alignment semester compared to pre-alignment (p < 0.05). Conclusions: Alignment of landmark literature in EBM with the associated disease state in pharmacotherapy coursework demonstrated a positive impact on student confidence in evaluating primary literature, and student rationale for clinical decision-making.

Examining Competencies within Institutional/Health System and General Medicine Rotations: Characterization for 12-week Onsite Blended APPEs

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Factors That Impact Knowledge and Confidence Prior to a Self-Care Course: Two Years of Data

Tiffany R. Shin, The University of Kansas, Amy Robertson, University of Arkansas for Medical Sciences College of Pharmacy, Northwest Campus, Heather L. Lyons-Burney, University of Missouri-Kansas City, Tatum Mead, University of Missouri-Kansas City, Karen L. Hardinger-Braun, University of Missouri-Kansas City, Kendall Guthrie, University of Missouri-Kansas City. Objective: Describe factors that impact pharmacy student knowledge and confidence prior to a self-care course. Methods: For two years, students in required self-care coursework at the University of Kansas (KU) and the University of Missouri-Kansas City (UMKC) Schools of Pharmacy were given a baseline survey and a 10-question pre-course self-care knowledge quiz. The course is offered
the spring semester of the 1st professional year (P1) at KU and 2nd professional year (P2) at UMKC. The baseline survey gathered student demographics and work history. The multiple-choice quiz questions were related to self-care concepts necessary for a minimally competent pharmacist. After each question, students rated their confidence in their answer on a 4-point Likert scale. For analysis, overall confidence was determined based on the percent of questions students rated as being confident or very confident in their answer. Students’ quiz scores and confidence were compared to demographics and work history using the paired T-test. Results: The baseline survey and knowledge quiz were completed by 486 students. The average quiz score was 40.7% +/- 14.4% and students were confident in their answer 41.6% +/- 25.2% of the time. Compared to P1 students (n=228), P2 students (n=258) scored higher (p=0.002) and were more confident (p< 0.001). Higher knowledge scores (p< 0.01) and higher confidence (p< 0.01) were seen in students with any community pharmacy experience, and higher scores (p=0.01) and confidence (p< 0.01) were correlated to more years of community work experience. This difference was not seen in hospital pharmacy work experience (p>0.05). Conclusions: Prior community-based pharmacy work experience and students’ level in the curriculum has an impact on students’ baseline knowledge and confidence in self-care topics.

First-year Health Professional Students’ Perceptions of Professional Identity and Teamwork Following a Public Health IPE

Kay Brooks, The University of Georgia, Tim Brown, The University of Georgia, Mary Kate Steinbeck, The University of Georgia. Objective: To compare pharmacy, nurse practitioner (NP), nursing, and epidemiology student reported Interprofessional Collaborative Competencies Attainment Survey (ICCAS) data and qualitative feedback related to professional identity and team-based care following a simulated public health outbreak of Giardia utilizing both in-person and telehealth patient experiences. Methods: First year pharmacy, nursing, NP, and epidemiology students work in teams to provide patient-centered care during a projected public health outbreak of Giardia in a rural community. To experience interprofessional skills taught in didactic curricula across each program, teams conduct patient interviews and focused exams, assessment and planning, patient education, and epidemiology reporting for an in-person and telehealth patient. Afterward faculty facilitate a debrief exploring concepts of professional identity including how students negotiate their professional role on the team and navigate different approaches to providing patient-centered care. Pre and post assessments using a modified ICCAS and qualitative feedback are used to understand learner’s evolution around professional identity related to communication, team functioning and collaboration skills. Results: In 2021, 148 pharmacy, 37 NP, 40 nursing, and 17 epidemiology students completed the assessment. Results for pharmacy, nursing, and epidemiology students show significant changes in interprofessional team skills related to professional identity formation (i.e., roles and responsibilities, collaboration, conflict management). NP students reported similar, but less significant, skill development. Qualitative data further support enhanced student awareness of professional identity and appreciation for each health care professional’s contribution to providing quality patient care. Conclusions: Intentionally designed interprofessional team-based care simulations can be effective to help all health care professions involved develop new insights on professional identity and the benefits of team-based healthcare to optimize patient outcomes.

First-Year Student Pharmacists’ Attitudes and Perceptions of Transgender Patient Care and Health Management

Paige Silvers, The University of Tennessee Health Science Center College of Pharmacy, Theodore Cory, The University of Tennessee Health Science Center College of Pharmacy, Nancy Borja-Hart, The University of Tennessee. Objective: The objective of this study was to evaluate the perceptions and confidence of first-year pharmacy students on transgender patient care and health management. Methods: A cross-sectional study was conducted in first-year pharmacy students (n=140) enrolled in the Foundations of Pharmacy Course (PHCY 1104) at the University of Tennessee Health Science Center College of Pharmacy. Students received a pre-lecture survey link containing five questions regarding their general perceptions and confidence level of transgender health management. After students attended class sessions including topics of cultural competency, implicit bias, and transgender perceptions, students received a post-lecture survey (8 questions) to reassess their perceptions. Survey responses were recorded and stored in Qualtrics, and data was analyzed using descriptive statistics and an independent t-test. Results: Of the 140 students included, survey response rates were 37% (n=52) for the pre-survey and 31% (n=44) for the post-survey. Results of the Likert scale questions show that providing cultural competency coursework increased students’ awareness and confidence in the health management of transgender patients. There were statistically significant (p<0.05) differences in pre-survey and post-survey results in 2 questions addressing...
the students’ confidence in their ability to manage the health concerns of transgender patients, as well as being familiar with appropriate guidelines to refer to if more information is needed. Additionally, 45% of surveyed student pharmacists agree that pharmacists need more education about health considerations of transgender patients. **Conclusions:** This cross-sectional survey helps identify a need for integrating transgender patient health management into pharmacy didactic curriculum. Establishing a gender-inclusive curriculum may help produce student pharmacists who feel equipped to manage the health of the growing transgender patient population.

**Glycemic, Cholesterol, and Weight Effects of L-carnitine in Diabetes: A Systematic Review and Meta-Analysis**

Jennifer Ko, Marshall B. Ketchum University, Eva Wong, Marshall B. Ketchum University, Huyentran Tran, Loma Linda University, Rebecca Tran, Keck Graduate Institute, Diana Cao, Marshall B. Ketchum University. **Objective:** L-carnitine is a possible adjuvant therapy for diabetes mellitus due to its potential roles in dyslipidemia, insulin sensitivity, and glucose metabolism. However, the clinical significance of L-carnitine supplementation in diabetes has not been fully elucidated. Therefore, this study aimed to explore the glycemic, cholesterol, and weight impacts of L-carnitine supplementation in diabetes. **Methods:** A comprehensive literature search using PubMed, EMBASE, and Cochrane CENTRAL databases was conducted from inception through June 30, 2021. Randomized controlled trials that evaluated the effect of L-carnitine in diabetes and reported outcomes including fasting blood glucose (FBG), hemoglobin A1c (HbA1c), total cholesterol (TC), low-density lipoprotein cholesterol (LDL-C), high-density lipoprotein cholesterol (HDL-C), triglycerides (TG), weight, or body mass index (BMI) were included. The weighted mean difference (WMD) and 95% confidence intervals (CI) were calculated using the DerSimonian and Laird random-effects model. **Results:** Seventeen studies involving 1622 patients were ultimately included in the meta-analysis. Compared to control, L-carnitine was associated with a statistically significant reduction in FBG (WMD = -8.2 mg/dL, 95% CI = -12.3 to -4.2 mg/dL), HbA1c (WMD = -0.5%, 95% CI = -0.8 to -0.1%), TC (WMD = -11.3 mg/dL, 95% CI = -16.3 to -6.3 mg/dL), and LDL-C (WMD = -8.8 mg/dL, 95% CI = -15.0 to -2.6 mg/dL). No significant effect on HDL-C, TG, weight, or BMI was seen. At doses between 1001 to 2000 mg per day, L-carnitine administration was associated with favorable outcomes on FBG, HbA1c, TC, LDL-C, and TG (p < .02 for all). **Conclusions:** L-carnitine supplementation in diabetes is associated with improvements in FBG, HbA1c, TC, and LDL-C. L-carnitine supplementation at 1001 to 2000 mg per day had the strongest data for benefit.

**How Critical Is It? Teaching Clinical Reasoning in a Critical Care Elective**

Susan E. Smith, The University of Georgia College of Pharmacy, Kendall A. Huntt, University of Georgia College of Pharmacy, Andrea Sikora, University of Georgia College of Pharmacy, W. Anthony Hawkins, University of Georgia College of Pharmacy, Christopher Bland, University of Georgia College of Pharmacy, Trisha Branan, University of Georgia College of Pharmacy. **Objective:** Examine the impact of a critical care elective (CCE) on student performance in two courses in the Doctor of Pharmacy curriculum that emphasize clinical reasoning and decision-making. The central hypothesis is that CCE completion will be associated with core course performance. **Methods:** The pedagogy of the CCE contains tools to help students develop clinical reasoning skills while learning complex pharmacotherapy. In doing so, students build a foundation on which to advance their clinical reasoning and decision-making. Integrated Patient Care (IPC) is a skills-based course that requires evidence-based drug therapy decisions. Pharmacotherapy is a didactic course with a flipped classroom structure. Students from the classes of 2019-2021 were grouped based on whether they completed the CCE during their third professional year. Student characteristics and course performance were collected. The primary outcome was a final grade of ‘A’ (90% or higher) in the Pharmacotherapy and IPC courses. Binary logistic regression was applied to identify factors associated with ‘A’ grades. Alpha less than 0.05 was considered significant. **Results:** Of 377 students, 129 completed the CCE. The proportion of students earning an ‘A’ was similar regardless of CCE completion in Pharmacotherapy but was higher in IPC for students completing the CCE (34% vs 23%, p = .021). In the adjusted analysis, students who took the CCE were almost twice as likely to earn an ‘A’ in IPC (OR 1.981, p = .007); CCE completion was not associated with an ‘A’ grade in pharmacotherapy (OR 0.736, p = .361). **Conclusions:** The foundational clinical reasoning skills acquired from the CCE might translate and improve students’ performance in other skills-based courses. Students may benefit from practicing clinical reasoning earlier in the curriculum to build up to effective and efficient clinical decision-making.
Immersion in the Pharmaceutical Industry - Bridging the Gap in the PharmD Curriculum

Jeanine A. Flanigan, University of Pittsburgh School of Pharmacy/Sandoz, Mackenzie Minogue, Janssen Pharmaceuticals, Holly Graber, Merck & Co., Corey Rantz, Bristol Myers Squibb, Amy Seybert, University of Pittsburgh School of Pharmacy. **Objective:** To evaluate the impact of incorporating a new pharmaceutical industry-focused course in the PharmD curriculum and support the students’ interest in industry. **Methods:** To bridge the gap in the PharmD curriculum and address the growing interest in pharmaceutical industry, a new course was constructed in collaboration with alumni working in industry and was titled Immersion in the Pharmaceutical Industry. This novel course focused on nine different functional areas and was presented in a flipped-classroom hybrid model, where the students reviewed pre-recorded lectures and then met synchronously to discuss. The goals of the course included exposing students to different functional areas and providing real-world examples from current industry professionals. The students were assessed through different formative and summative assessments, including simulated example problems and mock interviews. **Results:** Of the 40 students enrolled, 29 (72.5%) completed a survey evaluating their experiences as well as evaluating the course. Of the respondents, a majority (55.17%) were in their second professional year. At the end of the course, 29% were interested in pursuing an industry internship and 30% were interested in pursuing an industry fellowship in the future, with 83% seeing a professional future in industry. For: Assessing the course, 89.4% and 88.7% of the students agreed that the format of the course (asynchronous lectures and synchronous discussions) aided in their understanding of each functional area and 78.7% agreed that they felt better prepared to participate in additional industry experiences (for example, an internship or fellowship) because of the course. **Conclusions:** Overall, PittPharmacy’s new industry course has provided industry exposure and is preparing the students for a career in industry.

Impact of a Capstone Course on Student Confidence in performing Entrustable Professional Activities

Jarred B. Prudencio, University of Hawaii at Hilo, Camlyn Masuda, University of Hawaii at Hilo. **Objective:** To evaluate the impact a didactic capstone course has on third-year pharmacy students’ confidence in performing American Association of Colleges of Pharmacy Core Entrustable Professional Activities (EPAs) prior to Advanced Pharmacy Practice Experiences (APPEs). **Methods:** Pharmacy students completed a three-credit capstone course in the final didactic semester focused on patient cases and communication skills to prepare students for APPEs. At the start of the course, students in the Spring 2020 (Class of 2021) and Spring 2021 (Class of 2022) were asked to rate their self-confidence in their ability to perform each of the 15 EPAs. Responses were collected on a scale of 0 to 10, with 0 representing “not at all confident” and 10 representing “extremely confident.” Students then completed the course which included modules focused on ambulatory care, acute medicine, community pharmacy, and drug information. At the end of the semester, students were again asked to rate their self-confidence in the EPAs. **Results:** A total of 113 students completed the pre- and post-surveys, a response rate of 71.98%. Increases in average self-confidence was seen for all 15 Core EPAs. The largest increase was seen in the EPA “Establish patient-centered goals and create a care plan for a patient”, with a baseline of 5.41 to an end-of-course average of 7.23. The smallest increase was seen in the EPA “Fulfill a medication order”, which had a high baseline score of 7.21 and increased to an end-of-course average of 8. **Conclusions:** A capstone didactic course was able to improve students’ self-confidence in EPAs prior to APPEs. Further studies should assess the impact of the course on student competency levels for these EPAs.

Impact of a High-Fidelity Bedside Simulation on Student Confidence with Pneumonia Management

Rachel Klosko, Binghamton University, The State University of New York, Andrea Snyder, Binghamton University School of Pharmacy and Pharmaceutical Sciences, Sarah Lynch, Binghamton University School of Pharmacy and Pharmaceutical Sciences. **Objective:** To assess the impact of a bedside simulation on student confidence in principles of pneumonia pharmacologic management. **Methods:** Third-year pharmacy students were enrolled in this prospective study comparing student’s pre- and post-simulation confidence in the pharmacologic management of pneumonia. The high-fidelity mannequin simulation was designed to mimic an inpatient rounding experience. Groups of three to four students interacted with a simulated medical resident to answer questions and make recommendations for a patient with pneumonia. Groups were graded on their collective recommendations to the medical resident. Students completed a pre- and post-simulation survey utilizing a seven-part Likert scale to assess their confidence in pneumonia treatment principles. Student reports of confidence in pneumonia content were compared with exam questions assessing similar content. **Results:** A total of 69 (86.3%) and 52 (65.0%) students
Impact of a Revised Teaching Certificate Program on Pharmacy Residents Precepting Skills

Caroline M. Sierra, Loma Linda University, Lisa T. Hong, Loma Linda University. Objective: To assess the effectiveness of a revised teaching certificate (TC) program on precepting skills of pharmacy residents. Methods: In summer of 2020, the resident TC program was revised to incorporate equal time dedicated to didactic and experiential education. Pharmacy residents, fourth-year student pharmacists, and preceptors were surveyed before and after implementation of this revised TC program to assess the effectiveness of precepting by pharmacy residents. Resident precepting skills were assessed on a Likert scale of 1 (strongly disagree) to 4 (strongly agree). Results: After modification of the TC, more residents felt that the combination of the TC and time during learning experiences improved their development as a preceptor (60% vs 100%, p<.001). Approximately two-thirds of student survey participants were precepted by a resident. No significant differences were seen in the proportion of students who felt the residents motivated them to learn, asked questions that were easy to understand, provided actionable feedback, or were prepared to teach clinical knowledge/professional development (>90% of students agreed, all p>.05). Perceptions of these abilities were similarly unchanged among resident and preceptor survey responses after the TC program modifications. In contrast to most students “strongly agreeing” that residents had strong precepting skills, resident and preceptor responses shifted to “somewhat agree” after the TC changes, which may be explained by increased precepting knowledge and more responses from seasoned preceptors, respectively. Conclusions: Residents perceived that the modified TC program positively impacted development of their precepting skills. The TC program changes did not significantly affect student, resident, or preceptor perceptions of specific resident precepting abilities, though there was consensus between the groups in assessment of resident precepting skills.

Impact of a Skills-Based Course on Student-Perceived Confidence and Performance on SCHOLAR-MAC Simulations

Paige S. Brockington, Mercer University, Leisa Marshall, Mercer University, Kathryn Momary, Mercer University. Objective: To determine the impact of completing four individual SCHOLAR-MAC patient simulations in a skills-based course on students’ self-perceived confidence and performance before verses after. Methods: First-year students in an Integrated Patient Care course in Spring of 2021 who consented to participation were included in the study. Students completed four patient simulations where they interviewed the patient using SCHOLAR-MAC and made self-care recommendations to the patient. A pre- and post-course survey was administered to students with 7 questions assessing self-perceived confidence in performing SCHOLAR-MAC. Pre- and post- self-perceived confidence scores were generated by creating a mean score based on Likert scale responses. These scores were compared using a paired t-test. Correlation analysis was conducted to identify associations between the confidence mean and student performance on SCHOLAR-MAC simulations. Results: A total of 100 students (91.7%) completed the pre- and post-surveys. 44% of students were between the age of 20-23 years old, 72.5% identified as female, and 33.9% of students had 1 to 3 years of pharmacy work experience. The self-perceived confidence mean increased significantly from beginning to the end of the course (2.99 ± 0.46 versus 3.48 ± 0.43, p< 0.001). The pre-survey demonstrated a positive correlation between students who had greater than 1 year of pharmacy work experience and the mean confidence score (p< 0.012); however, there was no correlation between the confidence mean and improvement in performance on SCHOLAR-MAC simulations. Conclusions: This study suggests that students with previous work experience had increased self-perceived confidence in performing SCHOLAR-MAC at the beginning of the course; however, completion of the course eliminated this difference. The surveys served as a tool for student self-reflection on their knowledge and performance.
Impact of a Therapeutic Lifestyle Changes Elective on Student Empathy, Knowledge, and Perceptions

Rashi C. Waghel, Wingate University, Jennifer A. Wilson, Wingate University, Megan Coleman, Wingate University. Objective: To examine the impact of a Therapeutic Lifestyle Changes (TLC) elective course on student empathy, knowledge, and perceptions of confidence with counseling on TLC measures. Methods: A Qualtrics survey incorporating the Kiersma-Chen Empathy Scale (KCES) and knowledge questions were used to measure student empathy and knowledge at course initiation and conclusion over two offerings of the elective (2020 and 2021). Student perceptions, including confidence with TLC counseling, were assessed at course conclusion. Results: Average KCES scores (out of 105 points) were 81.7 (n=26) at course initiation and 79.7 (n=22) at course conclusion, resulting in a significant decrease in empathy scores (p=0.011). However, there was a significant increase in knowledge (p< 0.001) when comparing the average quiz scores of 54.1% and 75.0% at course initiation and conclusion, respectively. For each disease state/topic surveyed, the majority of students reported being somewhat or very confident in their ability to provide TLC counseling at course conclusion. Perceptions of what is considered a healthy lifestyle also changed for 72.7% of survey respondents. Additionally, the majority (72.7%) of respondents indicated the course had a moderate or significant impact on their own lifestyle/overall health. Conclusions: An elective course focused on TLC significantly improved students’ knowledge on this topic, and students’ perceived confidence with TLC counseling was high at course conclusion. While there was an unexpected decrease in the KCES score, this may be due to factors such as increased self-awareness or survey fatigue at semester end. Inclusion of dedicated therapeutic lifestyle changes instruction in pharmacy curricula can build student knowledge and confidence in counseling on TLC measures in preparation for pharmacy practice experiences.

Implementing Mental Health First Aid Training in a Doctor of Pharmacy Curriculum

Kimberly C. McKeirnan, Washington State University, Kathyrn MacCamy, Washington State University College of Pharmacy and Pharmaceutical Sciences, Jennifer D. Robinson, Washington State University College of Pharmacy and Pharmaceutical Sciences, Megan N. Williams, Washington State University, Taylor Bertsch, Washington State University College of Pharmacy and Pharmaceutical Sciences, Christina Buchman, Washington State University College of Pharmacy and Pharmaceutical Sciences. Objective: To describe the implementation of Mental Health First Aid (MHFA) training for student pharmacists in the didactic Doctor of Pharmacy curriculum at a college of pharmacy and to evaluate students’ perceptions of the training. Methods: MHFA is an eight-hour course that teaches participants to identify, understand, and respond to signs of mental illnesses and assist an individual who is experiencing a mental health crisis. In 2022, MHFA training was added as a required component of the Applied Patient Care (APC) laboratory course series that is required each semester of the didactic curriculum. Three faculty members participated in a MHFA train-the-trainer program between November 2021 and January 2022 in...
preparation for training to student pharmacists during spring semester. Pre- and post-training surveys were developed and administered to evaluate the students’ perception of the MHFA training. The survey included yes/no and Likert-scale items. Results: A total of nine MHFA trainings were offered in January and February 2022. Ninety-nine percent of eligible students (n=237) participated in MHFA training. Survey responses revealed 48% of student pharmacist participants reported knowing someone who may be in a mental health crisis and intending to reach out to that person, 28% reported knowing someone who may be at risk for suicide and intending to reach out to that person, and 24% reported intending to personally seek help for their own mental health. Conclusions: MHFA training was successfully implemented within the didactic curriculum of a Doctor of Pharmacy program. Similar programs could be implemented in other colleges and school of pharmacy nationwide to offer students training on caring for the mental health of themselves and their patients.

Improving Student Confidence and Understanding of the Patient-Centered Medical Home Model

Amanda M. Stahnke, University of Missouri-Kansas City, Lauren Smith, Kansas City Veteran Affairs Medical Center. Objective: To assess the change in pharmacy student confidence and knowledge regarding the patient centered medical home (PCMH) model and pharmacists’ roles within PCMH prior to and after a didactic and active learning experience. Methods: A voluntary, anonymous survey was created and administered to third year pharmacy students at the University of Missouri-Kansas City School of Pharmacy (UMKC SOP) before and after a spring 2022 applied skills lab period discussing PCMH. The survey consisted of four questions utilizing a Likert scale to assess students’ confidence and knowledge regarding PCMH. A fifth question created a unique anonymous identifier to pair students after completion of both surveys. Scores ranged from 1 (not confident/no knowledge) to 5 (very confident/very knowledgeable). After completion of the baseline survey, an introductory presentation discussing PCMH was given, followed by a recorded virtual team huddle, and a patient chart review where students were tasked with addressing a clinical question presented during huddle. Upon lab completion students were asked to participate in the post-survey. Results: The baseline survey was completed by 126 respondents (100% response rate) and most responses were 1 (not confident/no knowledge) to 2 (minimally confident/minimally knowledgeable). The post-survey was completed by 62 respondents (49% response rate) for questions 1 and 3, and 61 respondents (48% response rate) for questions 2 and 4. Most ratings on the post-survey were 3 (moderately confident/moderately knowledgeable) to 4 (confident/knowledgeable). Fifty-seven students’ paired responses from baseline to post-activity were analyzed and statistically significant differences were present for all four questions assessed (p<.001). Conclusions: Utilization of a didactic and active learning experience improved third year pharmacy student confidence and knowledge of the PCMH model and pharmacists’ roles within the model.

Incorporation of Pre-Exposure Prophylaxis (PrEP) Telehealth OSCE in a Skills-Based Pharmacy Course

Nancy Borja-Hart, The University of Tennessee, Kuan Xing, The University of Tennessee Health Science Center Center for Healthcare Improvement and Patient Simulation (CHIPS), Jamie Pitt, The University of Tennessee Health Science Center Center for Healthcare Improvement and Patient Simulation (CHIPS), Tim Doston, The University of Tennessee Health Science Center Center for Healthcare Improvement and Patient Simulation (CHIPS), Dawn E. Havrda, The University of Tennessee, Chelsea Renfro, The University of Tennessee Health Science Center College of Pharmacy. Objective: The purpose of this study is to evaluate the implementation and assessment results of a new OSCE, aimed at pharmacist prescribed pre-exposure prophylaxis (PrEP) in a telehealth setting. Methods: The two-part TelePrEP OSCE was implemented Fall 2020. Learners were evaluated based on a 3-component weighted score: SP-rated communication (45%), SOAP note (45%), and self-reflection (10%). SPs used 5 items from the Master Interview Rating Scale (MIRS) to rate communication skills (range: 5 – 25). Faculty used a SOAP note checklist (max = 370/300 for OSCE 1/2) and a 3-domain rubric for the self-reflection (SR) (range: 0 – 90). Descriptive statistics were reported. Correlations were conducted to examine the relationship between OSCE Part 1 & 2 scores. Demographic information and GPA were included in regression analyses on OSCE performance. This study was IRB approved. Results: One hundred and eighty-five 3rd year student pharmacists (61% female, age mean = 24.4 years) participated in this activity. Average scores were: OSCE 1: MIRS=22.83, SOAP=321.63, SR=88.51; OSCE 2: MIRS=23.22, SOAP= 268.42, SR=86.84. Weighted scores were higher in OSCE 2 (91.71) compared to OSCE 1 (90.06) (p<.01). SOAP note and SR scores were strongly correlated between OSCE 1 and 2, r=.36 and .28, p<.001, but no significant correlation for MIRS scores. Female students had higher weighted OSCE scores than
male students in OSCE 1 & 2. Controlling for gender, regression results showed GPA was a significant predictor for OSCE 1 weighted score but not for OSCE 2. Conclusions: Students performed well overall on the TelePrEP OSCE given the unique topic and delivery. Preliminary results showed that students’ competencies assessed in OSCE setting may not directly connect back to their general learning achievement (e.g., GPAs).

In-person versus Telehealth Standardized Patient Encounters: A Retrospective Analysis of 18 Case Pairings

Diamond R. Melendez, High Point University, Courtney L. Bradley, High Point University Fred Wilson School of Pharmacy, Sun Lee, High Point University, Christina H. Sherrill, High Point University. Objective: To compare average total, case-specific, and relationship and communication (R&C) scores on eighteen standardized patient (SP) cases for first-, second-, and third-year pharmacy students from Fall 2019 (in-person) to Fall 2020 (telehealth), and to describe student perceptions of the telehealth simulation pedagogy. The hypothesis was that students would perform better on in-person SP cases compared to telehealth. Methods: This retrospective study analyzed student performance on and perceptions of eighteen paired SP cases delivered in-person versus telehealth. Videoconference and telephone calls were used as telehealth modalities in Fall 2020. Data included case-specific scores assessing clinical knowledge and R&C scores evaluating soft skills (combined to determine total SP score). All scores were determined by a trained SP. Two-sample t-test and Fisher’s exact test were employed for comparisons of data between semesters. Qualitative data was collected from end-of-course surveys and analyzed via investigator triangulation for overarching themes. Results: Average total scores decreased significantly from in-person to telehealth for first-year SP cases, but not for second- or third-year cases. Case-specific scores did not change for any cohort. R&C scores decreased significantly across all three years. Survey data revealed mixed results about the transitional pedagogy, perceived benefits of telehealth, and telehealth communication skills. Conclusions: This study revealed overall, student performance on in-person versus telehealth cases was similar, with no significant effect on applied clinical knowledge. Quantitative and qualitative data suggested, however, that students had difficulty communicating effectively and building rapport via telehealth. Furthermore, results indicated first-year students performed more poorly on telehealth SP cases; thus, faculty could consider utilizing in-person encounters for early learners before implementing telehealth simulations to prepare students for future telehealth cases and advancements in healthcare.

Integrating Healthcare Analytics and Artificial Intelligence Experiences into Pharmacy Curriculum at Long Island University Pharmacy

Rim A. Elbeshbeshy, Long Island University, Janna Roitman, Long Island University, Mohammed Ghriga, Long Island University. Objective: Standardized educational exposure to healthcare analytics and artificial intelligence (AI) in pharmacy education is constantly evolving. This study aims to expose pharmacy students to new innovation paradigms, using analytics and AI-supported solutions, that are driving future pharmacy practice and patient-centered care. Methods: In November 2021, a series of lectures and project-based learning sessions were offered to third professional year pharmacy students enrolled in a Healthcare Informatics course. One hundred forty-six students attended the presentations and completed pre- and post-lecture surveys to help assess changes in knowledge. Students used a publicly available data set and data science platform (Anaconda) to build a heart disease predictive model. By leveraging how individual risk factors contribute to heart disease, students developed insights into personalized patient care interventions and outcomes. Subsequently, perception surveys were provided to capture students’ attitudes towards the utility and benefits of AI. University’s IRB approved this study. Results: Based on post-lecture survey results, most students reported an increased interest in the field of healthcare analytics and AI (73.4%) and an interest in pursuing a career in these fields after pharmacy school (63.6%). The majority of students indicated they can utilize AI in their professional careers (79%), recognize AI benefits in improving medication safety (88.1%), and appreciate its role in revolutionizing the future of healthcare practice (79%). Based on the experiential learning opportunity survey, most students found the project to be exciting and unique (70.2%) and relevant to the pharmacy profession (71.6%). Conclusions: Based on the success of this healthcare analytics and AI project, LIU is exploring further ways to incorporate this experience into the curriculum and preparing students for the digital transformation in pharmacy practice and patient-centered care.

Integrating Optional Well-Being Exercises into a Required Course for First-Year Student Pharmacists

Heather Johnson, West Virginia University, Ashlee McMillan, West Virginia University. Objective: Assess
Integrating Skills-based Activities from Two Required PharmD Courses Utilizing Standardized Patients Through Telehealth Communication

Fraidy N. Maltz, Long Island University, Brooke D. Fidler, Long Island University. **Objective:** To determine students’ perceptions on their abilities to perform combined patient counseling and medical history taking via telehealth using standardized patients (SPs) when integrating these skills-based activities from two individual courses. **Methods:** First-professional year students enrolled in both an introductory pharmacy practice skills laboratory course and a physical assessment course participated in individual patient counseling and medical history taking practice sessions respectively, with formative assessment. This was followed by summative assessment of combined patient counseling and medical history taking skills by faculty and residents utilizing SPs through telehealth communication via the Zoom platform. Students completed a pre and post survey before and after the combined skills encounter on their perceptions and abilities to perform these competencies. **Results:** A total of 157/212 (74%) and 129/212 (61%) students responded to the pre-survey and post-survey, respectively. There was a statistically significant increase (P<0.0001) in student confidence before and after the integrated activity as it related to taking a medical history and patient counseling. In addition, students reported a statistically significant increase (P<0.0001) in their confidence in both skills using telehealth communication. Approximately 87% of students preferred the integrated activity over doing these activities separately. Overall, 97% of students would recommend the integrated telehealth activity to other students. **Conclusions:** Students felt more confident with their patient counseling and medical history taking skills after the combined encounter with SPs using telehealth communication over Zoom.

Interprofessional Education Workshop for Prescription Drug Monitoring Programs

Mitchell S. Howard, The University of Toledo College of Pharmacy & Pharmaceutical Sciences, Shirley M. Bodi, The University of Toledo College of Medicine & Life Sciences, Michael J. Peeters, University of Toledo College of Pharmacy & Pharmaceutical Sciences. **Objective:** To describe an interprofessional education workshop related to controlled-medication therapeutics and a Prescription Drug Monitoring Program (PDMP). **Methods:** Two-hundred-seventy second-year students (176 medical students, 94 pharmacy students) participated in one two-hour team-based learning workshop that focused on one state’s PDMP (Ohio Automated Rx Reporting System; OARRS). For class preparation, all students were provided with Centers for Disease Control and Prevention resource handouts about opioids, Ohio opioid prescribing guidelines, and a 30-minute video about OARRS. Students were divided into interprofessional teams of 8 students (5 medical, 3 pharmacy) with some team members present physically and others participating virtually. At the start of the session, students completed individual then team quizzes over preparatory material. After quizzes, two application-based cases were discussed by teams, and then by instructors with all teams. The cases included questions that required teams to use ‘OARRS Academy’ (an educational platform developed by the State of Ohio Board of Pharmacy that imitates OARRS) in their decision-making processes. Student quiz results and overall workshop
evaluations were analyzed. **Results:** With limited quiz reliability (10-items; Cronbach’s alpha=0.4), individual quiz-scores between pharmacy and medicine did not differ [PharmD mean=7.4, MD mean=7.0. p=0.4], suggesting that students from both programs were well-matched for knowledge/ability. The mean score on the team quizzes was 10. Students’ feedback affirmed that helpful collaboration had ensued. Further, students appreciated this collaboration with realistic scenarios. Some students noted that technology limited communication and interactions, though suggested smaller groups may help enhance engagement. Additionally, mass logins stalled OARRS Academy. **Conclusions:** Students demonstrated individual and greater team-based knowledge. Collaborating across professions simulated future experiences. Future iterations will have smaller groups for improved collaboration and decreased OARRS Academy login limitations.

**Interprofessional Simulation Learning Game Increases Socialization and Teamwork Among Students of Health Professions Programs**

Nicholas M. Fusco, **University at Buffalo, The State University of New York,** Catherine Mann, **University at Buffalo School of Nursing,** Kelly Foltz-Ramos, **University at Buffalo School of Nursing,** Patricia Ohtake, **University at Buffalo Office of the Vice President for Health Sciences.**

**Objective:** Compare changes in health professions students’ interprofessional (IP) socialization and readiness to function in IP teams and understand students’ experiences during and after participating in a simulation learning game (Friday Night at the ER; FNER) experience using a mixed-methods design. **Methods:** Participants from thirteen health professions programs participated in this experience centered on playing FNER during Fall 2021. Student teams engaged in open discussion, played the game, and participated in team debriefing. Before and after the experience, students completed an instrument to evaluate the impact of the experience on their IP socialization and readiness to function in an IP team. After the experience, students debriefed within their team and completed a program evaluation. Pre- and post-experience data were compared using paired sample t-tests, program evaluation data were computed as means and frequencies, and qualitative thematic analysis was derived from team debriefing responses and open-ended questions. **Results:** IP socialization increased from Fairly Great to Great Extent (5.5±0.9 vs. 6.5±0.8; p<.001) among all students (N=336) with a large effect size (Cohen’s d =1.1). Program evaluation data revealed students highly valued this experience as being effective and important to their professional development. Qualitative analyses revealed three overarching themes related to the student experience: need to be strategic (emphasizing prioritizing care; using data; balancing staffing needs, cost, and quality), importance of communication and teamwork, and need for systems-based thinking (making connections between their individual actions and the bigger picture). **Conclusions:** An IP learning experience using a simulation learning game, such as FNER, with debriefing can be an enjoyable and effective method to enhance students’ IP socialization and to lay the foundation for communication, teamwork, and systems-based thinking.

**Introducing Social Determinants of Health Concepts to First-Year Pharmacy Students in a Pharmacy Skills Lab**

Kevin T. Fuji, **Creighton University,** Kimberly J. Begley, **Creighton University School of Pharmacy and Health Professions**, Claire Franey, **Creighton University,** Samantha Kanaly, **Creighton University**, Timothy Ivers, **Creighton University.**

**Objective:** To describe the perceived value of completing a social determinants of health-focused case study in a first-semester, first-year pharmacy skills lab course. **Methods:** This was an educational evaluation utilizing a qualitative thematic analysis of student reflection responses. A case study was created to highlight a patient who was experiencing social determinants of health problems, including: financial issues/lack of health insurance, transportation issues, poor health literacy, homelessness, and food insecurity. The case was presented during a 20-minute block in which students first identified social determinants of health problems and generated potential solutions that could be provided or facilitated by a pharmacist. This was followed by a 10-minute small group discussion led by a course instructor. After the discussion students responded to two reflection questions: 1) What did you learn from this case that will impact your future practice as a pharmacist?; and 2) In what ways do you think you need to improve when dealing with patients impacted by social determinants of health? The authors separately open coded all responses, followed by categorization of similar codes, and identification of themes and representative quotes describing the relationships between various categories. **Results:** Thirty-seven students responded to the reflection questions. Three overarching themes emerged: 1) there is a lot more to pharmacy than just drugs; 2) it is important to think about the whole person; and 3) need to become more aware of community resources. **Conclusions:** There is value in introducing social determinants of health concepts early on in
students’ training. Future efforts will focus on longitudinal education to better understand the most effective ways to integrate this content across courses and align it with therapeutic knowledge and clinical skills training.

It Takes a Village: Interprofessional Outpatient Care and Diabetes Medication Management Using Continuous Glucose Monitoring

Courtney Robertson, The University of Louisiana at Monroe, Stephen Hill, The University of Louisiana at Monroe, Sonia Garner, Ochsner LSU Health Monroe Medical Center, Teri O’Neal, Ochsner LSU Health Monroe Medical Center, Eul Luther, Ochsner LSU Health Monroe Medical Center. Objective: To evaluate continuous glucose monitoring (CGM) results and interventional effects on A1C levels for type 2 diabetes mellitus (T2DM) patients through interprofessional practice. Methods: Patient data from a family medicine clinic within an affiliated teaching institution was reviewed for this IRB-approved retrospective analysis to assess the benefits of using temporary CGM with a team-based approach, including clinical pharmacists, student pharmacists, diabetes care nurse, medical residents, and attending physicians, to T2DM therapy management. Demographic information, pre- and post-CGM A1C, diabetic medications and respective therapy changes were collected; the primary outcome measure was change in baseline A1C levels up to six months after placement of the CGM. Statistics were calculated for pre- and post-CGM items using paired t-tests with α = 0.05. Results: 115 patients (median age 59 years; 62.6% female, 67.8% African American) were included; pre-CGM median A1C was 9.9% with a statistically significant post-CGM median A1C reduction of 1.14% (p<.001). Collaborative post-CGM optimization of T2DM management led to statistically significant diabetes medication changes (89.6%) and dose adjustments (68.7%). The majority of dose modifications (64.3%) included changes to metformin or insulin. Sulfonylureas were discontinued most often for patients, while GLP1 agonists and SGLT2 inhibitors accounted for 18.3% of class additions to pre-CGM therapies. Conclusions: Evidence of CGM effectiveness in lowering T2DM A1C levels utilizing interprofessional therapy management could allow for widespread use of this strategy and ultimately better patient outcomes. Additionally, incorporation of multiple disciplines may lead to more optimal, individualized therapy choices. These results could lead to enhanced learning opportunities for student pharmacists and medical residents, demonstrating the continued need for collaborative services and CGM use among T2DM patients.

Landscape of Skills Laboratory Courses and Faculty Workload Across Schools and Colleges of Pharmacy

Stacey D. Curtis, University of Florida, Courtney L. Bradley, High Point University Fred Wilson School of Pharmacy, Heidi Anksorus, University of North Carolina at Chapel Hill, Mariette Sourial, Palm Beach Atlantic University, Earl Morris, University of Florida College of Pharmacy, Krista L. Donohoe, Virginia Commonwealth University. Objective: To describe the current landscape of skills laboratory courses and faculty workload across the American Association for Colleges of Pharmacy (AACP). Methods: The AACP Skills Laboratory Special Interest Group (SIG) was sent an anonymous survey in Fall of 2021. Questions assessed faculty demographics, skills laboratory course format, faculty workload, and job satisfaction before and during COVID-19, among others. Descriptive statistics were generated, and changes in measures before and during COVID-19 were assessed using paired t-test. Results: Faculty from 44 of 142 schools of pharmacy responded to the survey. Participants (n=45) were mostly assistant professors (49%), non-tenure track (80%), female (98%), white (89%), and from a public university (51%). Schools had a mean of 102 students per class, with a mean of 2 skills laboratory courses in both first and second year and 1.7 in the third year. Courses had a mean 1.6 lab coordinators per course; however, the ideal number of lab faculty endorsed was 3 per 100 students in a given lab course. Faculty spent a mean 34.4 and 38.2 hours per week related to laboratory activities before COVID-19 and during COVID-19, respectively. However, mean assigned percent effort was only 44%. Interestingly, overall job satisfaction (Likert scale 1-10) decreased from 7.6 before COVID-19 to 6.4 during COVID-19 (p< 0.01), with satisfaction specifically with their laboratory role also decreasing from 7.5 to 6.6 (p=0.003). Conclusions: The skills laboratory faculty surveyed reported a high number of hours coordinating laboratory activities which is only part of their assigned effort. Furthermore, COVID-19 appears to have played a role in job and laboratory teaching satisfaction.

Learning With, About, and From COVID-19: An Interprofessional Global Comparison of Pandemic Responses

Melody Ryan, University of Kentucky, Hartley C. Feld, University of Kentucky College of Nursing, Madeline Aulisio, Health and Exercise Science Transylvania University, James Ballard, Center for Interprofessional and Community Health Education. Objective: COVID-19
necessitated a pause on study abroad experiences. To address this situation, a fully virtual, 13-week course was developed by faculty from four health colleges to provide global health learners with an opportunity to compare country responses to the pandemic within an interprofessional context. Methods: A flipped classroom strategy was utilized. Interprofessionality was intentional yet implicit. Groups of 3-4 students were assigned a country. Team assignments were a key informant interview, a country-level report, and a presentation. Individual asynchronous assignments were readings/discussions and quizzes. One survey measured learning outcomes, course satisfaction, and effectiveness utilizing a retrospective pre/post methodology. Selected Level 1 CUGH Interprofessional Global Health Competencies compared students’ self-assessed abilities on a 5-point Likert scale. A two-tailed, paired t-test with Bonferroni correction was used to compare means before and after the course. Results: Forty-three students from six colleges enrolled; 37% completed the evaluation. Competencies with significant improvement (all p < 0.017) included a better understanding of the student’s place in the world; improved interprofessional communication skills; population health data skills; and understanding of health systems and entities that influence global health and development. Students also gained an understanding of the importance of cultural context, determinants of health, and diplomatic trust. Key informant interviews was rated the most helpful assignment. Complexity of factors in public health, secondary impacts, and interprofessional collaboration were frequent comments. Conclusions: This course addressed the pause in study abroad experiences. Key informant interviews added richness and context. Students experienced gains in understanding health systems, secondary impacts on vulnerable populations, and how trust and communication contribute to health. The interprofessional focus highlighted the roles involved in the pandemic response and contributed to learning and course impact.

March Medication Madness: Assessing Bracketology’s Impact on Pharmacy Student Learning

Allison Hursman, North Dakota State University, Elizabeth Monson, North Dakota State University, Jeanne E. frenzel, North Dakota State University, Lisa Richter, North Dakota State University. Objective: The March Medication Madness project aimed to describe the impact of bracketology on student engagement and knowledge of material. Methods: March Medication Madness was implemented into a capstone course offered in the final semester of the didactic pharmacy curriculum. Students created medication related pearls, or pieces of knowledge, which were paired together in a 32-team tournament style bracket. Students then completed brackets, predicting the winning pearls, and voted weekly to determine the most clinically relevant or practice changing pearl. Student knowledge was assessed pre- and post-activity along with a post-activity engagement assessment. Results: Most students agreed or strongly agreed that the bracketology activity increased understanding and stimulated interest in the course material, while adding an element of fun to the course. There was a significant increase (t51 = 3.34, p = 0.002) in the average percentage of multiple-choice questions students answered correctly from the pre-test (57.7% ± 1.5%) to the post-test (63.1% ± 1.9%). Pearls that progressed the farthest within the voting were no more likely to be associated with an increase in knowledge than pearls that were eliminated in the first two rounds of voting. Conclusions: Implementation of a bracketology activity into the curriculum was fun and engaging for students, based on Likert scale responses, and students felt strongly that it aided in their understanding of course material. However, an increase in knowledge was not correlated with how far a pearl progressed within tournament voting. This shows the importance of structuring gamification in a way that truly provides educational value and enforces the need to make modifications to the activity for future iterations to better promote student learning.

Multi-Institutional Use of Longitudinal Thematic Gaming to Increase Student Engagement

Rebekah M. Benitez, University of the Incarnate Word, Martha Garcia-Stout, University of Central Florida, Cheryl Horlen, University of the Incarnate Word, Krista L. Donohoe, Virginia Commonwealth University, Deanna Tran, University of Maryland School of Pharmacy. Objective: To evaluate the use of longitudinal thematic gaming at four different institutions and its effect on student engagement. Methods: Four institutions incorporated a Harry Potter (HP) thematic gaming design into their courses. Shared course design concepts include: formation of student groups, development of theme-based activities (eg, use of HP characters in patient cases), and competitive structuring through use of an optional point-reward system. A mixed-methods approach was used to analyze available data. Thematic analysis was used for qualitative course evaluation comments. Quantitative course evaluation data was analyzed. Grades from one institution were analyzed using one-way ANOVA and Tukey post-hoc test. Results: Quantitative course evaluation data found that students enjoyed use of the HP theme to facilitate learning and felt it increased student engagement. The overall attitude towards using HP in the curriculum was positive, indicating that thematic gaming can be an effective way to engage students and improve their learning experience.
engagement in the course. A total of 131 course evaluation comments were evaluated. Out of the course evaluation comments, 64.9% commented on increased student engagement, 35.9% commented on thematic course design, and 16% commented on the gaming component. At one institution, post-hoc analysis showed that average grades in the two years prior to HP theme incorporation were significantly lower (7.3%) compared to 2021 after theme incorporation was complete ($p<.0001$). Post-hoc analysis also found a 196% improvement in the average percent of students earning an A, and a 73% reduction in non-passing grades following theme incorporation. A potential disadvantage of longitudinal thematic gaming is increased workload for course facilitators. **Conclusions:** Incorporation of longitudinal thematic gaming, specifically HP theme, at four institutions was well received by students and increased student engagement.

**North by Northeastern: Giving Direction to the Curricular Mapping Process**

Alexa A. Carlson, Northeastern University, Adam B. Woolley, Northeastern University, Stephanie L. Sibicky, Northeastern University, Michael J. Gonyeau, Northeastern University. **Objective:** To describe the approach one school of pharmacy used to map the curriculum in a forward-thinking method with the anticipation of new ACPE standards and curricular revision. **Methods:** In preparation for curricular revision, ACPE self-study, and updating the assessment plan, the Office of Academic Affairs & Assessment (OAAA) determined an updated evaluation of our current courses was needed. In preparation for mapping the curriculum, the OAAA created a survey asking faculty to map their course to different assessment outcomes and level of application. The outcomes included Ability Based Outcomes (ABOs), Interprofessional Education Collaborative (IPEC) competencies, and Entrustable Professional Activities (EPAs) in an attempt to be forward thinking for our future curricular and assessment plans. Faculty were also asked to map to level of introduced (I), reinforced (R), and proficient (P) to assist the assessment committee in updating the assessment plan. Faculty participated in town halls with a copy of their syllabus and were broken into small groups with a representative from the OAAA answering questions on how to apply the mapping criteria. Participants were asked to submit their map via a Qualtrics survey. **Results:** 27 individual courses responded to the survey. The majority of survey respondents said the town hall facilitated mapping updates from their original syllabus (72% IPEC competencies, 33.33% ABOs, 40.7% EPA). Unclear points brought up by faculty mainly were surrounding assigning level of outcome (I, R, P). **Conclusions:** Mapping to multiple outcomes helped prepare for accreditation, update the assessment plan, and evaluate current offerings for the process of curricular revision and self-study. A quality improvement plan for regular re-evaluation of the curricular map was incorporated into the assessment plan.

**Not a Sprint, but a (Boston) Marathon: Redesigning the Curriculum Using a Competency-Based Education Model**

Stephanie L. Sibicky, Northeastern University, Debra Copeland, Northeastern University, Michael J. Gonyeau, Northeastern University. **Objective:** Describe a curriculum revision process transforming a traditionally-structured PharmD program into a competency-based education (CBE) model. **Methods:** A backwards design process started in 2019 with the formation of the curriculum revision taskforce (CRT). The CRT is composed of faculty from each department, representing all teaching areas: one assistant dean of academic affairs and assessment, one pharmacy practice, one social/administrative sciences, two pharmaceutical sciences, one experiential and continuing professional education. Members have specialized interest or expertise in curriculum and/or instructional design. A proposed CBE model for the new curriculum and multi-pronged strategy to obtain feedback and guidance was employed. Three townhalls open to all faculty and staff enabled the CRT to share survey findings and allow discussion to shape progression of the revision. Five surveys were deployed: 4 to internal stakeholders and 1 to external stakeholders. **Results:** The adoption of EPA-based programmatic outcomes occurred in Spring 2021. Townhall dates in 2021, attendance, and post-session survey responses: May, 32, 18; July, 23, 7; and September, 22, 14; respectively. The external stakeholder survey had 26 responses. Based on feedback received from the townhalls and surveys, the CRT developed a program plan integrating courses horizontally and vertically within a CBE framework during an October 1 retreat. New course syllabi integrating pharmaceutical sciences, pharmacotherapeutics, and social/administrative sciences are under development incorporating CBE and EPA-based outcomes. Members of the CRT will serve as representatives in syllabi working groups to facilitate communication between integrated courses. **Conclusions:** The curriculum revision process is iterative and ongoing to meet the goal of implementing a new curriculum in Fall 2023. Once the PharmD revision is completed, this process will be employed to revise the Masters and PhD programs.
Outcomes from a Crossover Masters of Athletic Training Core Content and PharmD Elective Courses

Teresa M. DeLellis, Manchester University, Lucas Dargo, Manchester University, Sarah Gordon, Manchester University. **Objective:** To evaluate effects of a crossover Master of Athletic Training (MAT) and PharmD course on student self-efficacy scores relating to interprofessional competencies and course outcomes. **Methods:** A PharmD elective was designed to coincide with a 2-credit hour, January-term MAT pharmacy principles course. MAT and PharmD students were assigned interprofessional semester pairs who completed daily team-based, graded worksheets on pharmacy-related core MAT content. Two graded, interprofessional activities were designed for MAT students to teach PharmD students MAT-related principles frequently encountered by community pharmacists. An anonymous, voluntary self-efficacy Qualtrics survey based on a 5-point Likert Scale of course outcomes and interprofessional education (IPE) competencies was distributed to the students on the first and last days of the course. The post-course survey also included open-ended course feedback questions. **Results:** Thirty-two out of 47 students (17 MAT, 15 PharmD) over 2 course offerings completed both surveys. Self-efficacy scores related to course outcomes improved on an average of 1.3/5 points in both student groups (starting mean 2.5 range 2-3, ending mean 3.9 [3-5]). IPE competency self-efficacy scores remained high after the course (4.2 [3-5] to 4.7 [4-5]). Power was not reached to evaluate the statistical significance. Comments from open-ended questions detailed specific improvements in IPE knowledge, particularly related to scope of practice and collaboration opportunities. Students most appreciated the interprofessional team-based aspects of the course and noted greater improvement in knowledge and skills with in-person sessions compared to virtual. **Conclusions:** Student self-efficacy scores related to intersecting content between MAT and PharmD programs increased after a crossover course. IPE self-efficacy scores increased minimally from a high starting point. Student comments indicated in-person activities more enjoyable and effective for IPE components.

Partners in Learning and Leading (PILL): Design & Assessment of a Pharmacist-College Mentoring/Teaching Partnership

Caitlin M. Gibson, Virginia Commonwealth University, Abigail L. Hulsizer, University of North Texas Health Science Center, Brittany N. Palasik, University of North Texas Health Science Center College of Pharmacy. **Objective:** The Accreditation Council for Pharmacy Education charges Colleges of Pharmacy to provide student mentoring, leadership development, and professionalism training. One limitation to individualized mentoring is faculty workload and time constraints. The University of North Texas Health Science Center College of Pharmacy (HSCCP) designed a novel program–Partners in Learning and Leading (PILL)–to partner pharmacy students with local pharmacist mentors based on career interests for the purpose of leadership and career development mentoring. The objective of this project was to assess student and mentor perceptions of experiences and learning through the program. **Methods:** PILL mentors were recruited from HSCCP’s alumni database and professional network. For the pilot program, each mentor was paired with 8-10 P2 students based on career interests. After a training session, mentors led a small-group discussion focused on leadership styles, skills, and CV building. Students completed pre-work prior to the session. Both students and mentors completed a post-survey to assess perceptions and learning during the session. **Results:** In Fall 2021, ten mentors and 69 mentees completed PILL program post-surveys. Over 86% of students rated the discussion topics, individualized advice, and mentor anecdotes as effective/very effective for leadership development learning. In open-ended feedback, students especially valued the individualized career development mentorship. Mentors also reported the learning activities were effective or highly effective, and students met or exceeded mentor expectations. Spring data is pending. **Conclusions:** The pilot PILL program was an effective method for individualizing mentorship and providing leadership and career guidance for P2s. Based on positive feedback the program will be expanded to P3s, and future PILL mentoring sessions will focus primarily on career development and be coupled with programming from the university’s Career Readiness Center.

Pharmacy Student Perceived Confidence and Abilities in an Advanced Clinical Pharmacogenomics Elective

Rustin D. Crutchley, Washington State University, Lauren Marcath, Washington State University. **Objective:** To assess changes in confidence and abilities among students enrolled in a new Advanced Clinical Pharmacogenomics elective course. **Methods:** Second- and third-year students from two campuses were enrolled in elective during Spring semester. The elective builds upon required basic clinical pharmacogenomics course first-year students completed during Spring semester. It included new topics involving gene-environmental interactions,
drug-induced hypersensitivity reactions, neurology, diabetes, transplantation, infectious diseases, and more advanced discussion of cardiovascular disease, pain management, depression, and germline/somatic oncology. Furthermore, the elective encouraged inter-professional engagement with a lecture on ethical considerations in genetics led by genetic counselor. The elective concluded with entrepreneurial aspects of clinical implementation of pharmacogenomics. Course delivery was implemented using hybrid approach comprising in-class and online lectures. As an institutional Test2Learn partner, students had an optional opportunity to use their own 23andMe raw genetic data with Test2Learn platform. Students opting out of personal genomic testing had an equal opportunity to use anonymous genetic data available within Test2Learn platform. Students were asked to take a nine question pre- and post-course survey to assess confidence and abilities related to application of pharmacogenomics. Wilcoxon Signed Rank tests were used to compare changes in paired pre- and post-survey responses. Results: Among 39 students who completed the elective, 20 (51.3%) completed the pre- and post-survey. Across all paired pre- and post-survey responses, student perceived confidence and abilities in application of pharmacogenomics increased significantly over the course (p<.001). These findings were supported by student performance on all three course assessments with mean scores exceeding 90%. Conclusions: The elective significantly improved students’ perceptions of confidence and abilities in application of pharmacogenomics and offered students additional opportunities to develop greater competency in pharmacogenomics.

Preventing for Pharmacy Residency: Is There a Right Way? 
Jenna Mills, University of Findlay, Celeste Voight, University of Findlay, Nira N. Kadakia, University of Findlay. Objective: Previous studies have evaluated the prevalence of postgraduate pharmacy residency preparation offerings (PPRPOs), but none have compared various methods and described the impact on the American Society of Health-System Pharmacists (ASHP) resident matching program (“the match”) rates. The purpose of this study was to summarize program characteristics and determine if different residency preparation methods impacted Postgraduate Year 1 (PGY1) match rates. When comparing between different PPRPOs, we hypothesized there would not be a difference in match rates. Methods: From October through December 2021, an electronic survey was sent to administrators at 138 programs accredited by the Accreditation Council for Pharmacy Education (ACPE) to determine PPRPO presence, methods, composition, and attributes. ASHP 2021 match statistics for schools (PGY1 combined phase I and II) were also utilized. Data were analyzed using the independent, two-tailed t-test (alpha=0.05). Descriptive statistics were used to analyze demographic information. Results: Of 24 responses received, 6 were discarded due to duplicate entries (13% response rate). Most respondents offered postgraduate residency preparation (88.9%). Methods and prevalence of PPRPOs employed by respondents were: Q&A/panel discussion (75%), seminar (68.8%), workshop (56.3%), and elective course (56.3%). While match rates at schools or colleges of pharmacy with PPRPOs were higher compared to programs without PPRPOs (p=.029), the match rates were similar when the various preparation methods were compared. Interview preparation, CV development, residency selection, and showcase preparation was most often covered in elective courses and seminars (100% and 90.9%), workshops (66.7%), and Q&A/panel discussions (66.7%), respectively. Conclusions: While PPRPO method did not make a significant difference in match rates at pharmacy programs, PPRPO presence did. The availability of PPRPOs in pharmacy programs may be useful to improve schools’ residency match rates.

Preparing Students to Address COVID-19 Vaccine Hesitancy in Racial/Ethnic Minority Populations Utilizing Motivational Interviewing
Jonathan Jackson, Palm Beach Atlantic University, Erenie Guirguis, Palm Beach Atlantic University, Mariette Sourial, Palm Beach Atlantic University, Lindsey Pinder, Palm Beach Atlantic University, Sunita Pirmal, Palm Beach Atlantic University, Jamie Fairclough, Roseman University of Health Sciences College of Medicine. Objective: The objectives of this educational initiative were to develop and assess student-pharmacists’ ability to address vaccine hesitancy in racial/ethnic minority populations and evaluate changes in student confidence. Methods: First-, second-, and third-year pharmacy students elected to participate in the training. All participants were required to have completed the School’s didactic curriculum regarding motivational interviewing (MI) and patient counseling. Participants completed an asynchronous web-based module that focused on MI to address COVID-19 vaccine hesitancy. Students then participated in a live group OSCE with three standardized patient encounters to address COVID-19 vaccine concerns that are predominant among racial/ethnic minority populations. The student groups were assessed by faculty using a 16-item analytical checklist targeting the core elements of MI and ability to correct vaccine misinformation. During the post-OSCE
debriefing, students received feedback from the standardized actors and faculty evaluators. Additionally, students were surveyed pre- and post-OSCE to assess their confidence to address COVID-19 vaccine hesitancy in racial/ethnic minority populations. Results: A total of 17 students participated. The average score on the OSCE was 71.5%, with four out of six groups receiving a passing score. Student performance was strongest in the following domains: open-ended questioning, affirmative speech, empathy, elicit reason(s) for hesitancy, and reflective listening. There was a 100% response rate on the surveys with a significant increase in student confidence seen on the post-survey (p=0.001). Overall, 100% of students rated the training as either “excellent” or “good.” Conclusions: This educational initiative boosted student confidence to address COVID-19 vaccine hesitancy in racial/ethnic minority populations. While the majority of students successfully utilized MI to combat vaccine hesitancy during the OSCE, further exploration is needed to determine real-world performance.

Prevalence and Value of Board Certification Among Pharmacy Practice Faculty in the United States

Angela Bingham, Philadelphia College of Pharmacy, Volodymyra Fedkiv, Saint Francis Hospital, Justin Delic, Cooper University Health Care, James Hollands, Philadelphia College of Pharmacy, Stacy Pasciolla, Philadelphia College of Pharmacy, Laura Pontiggia, Thomas Jefferson University. Objective: To determine the prevalence of board certification among pharmacy practice faculty in the United States, motivators and barriers to certification, and professional achievements and accomplishments that may support career advancement. Methods: In phase I of the study, the lists of pharmacy practice faculty from the American Association of Colleges of Pharmacy (AACP) and board certified pharmacists from the Board of Pharmacy Specialties (BPS) were cross-referenced to determine the prevalence of board certified pharmacy practice faculty in the United States. In phase II, faculty in the AACP list were stratified by rank and invited to participate in the survey comprised of 52 questions regarding professional characteristics, motivators and barriers to board certification, and professional achievements and accomplishments that may support career advancement. Results: The prevalence of board certification among the 3276 pharmacy practice faculty was 56.4%. Of 2284 faculty invited to participate, 746 completed the survey with a 32.7% response rate. Among currently (n=546) and previously (n=27) certified faculty, the desire to be recognized as an expert in the field was ranked as the most common reason they obtained board certification (61%). Among those never certified (n=173), no perceived need was recognized as the most common barrier to board certification (55.1%), with the majority stating that they would pursue board certification if required by their employer (55.1%) or for a salary increase (52.7%). There was a positive correlation between board certification and professional accomplishments. Conclusions: Prevalence of board certified pharmacy practice faculty has increased since 2011, but motivators and barriers for board certification remain similar. Board certification may support career advancement for pharmacy practice faculty.

Qualitative Evaluation of Student Reflections Following a Photovoice Activity Focused on Social Determinants of Health

Sharon E. Connor, University of Pittsburgh, Kobi Griffith, University of Pittsburgh, Peyton Skinker, University of Pittsburgh, Sally Haack, Drake University, Lauren Jonkman, University of Pittsburgh, Gina M. Prescott, University at Buffalo, The State University of New York, Jeannine P. Abrons, The University of Iowa. Objective: The purpose of this study was to evaluate student reflections using a thematic analysis following a photovoice assignment and group debrief discussing social determinants of health (SDOH) and socioecological model (SEM). Methods: First-year pharmacy students at four schools of pharmacy completed an innovative photovoice activity centered on the SDOH and SEM. Students then participated in a group debrief followed by a reflection addressing two standardized prompts. De-identified reflections were analyzed using an immersion-crystallization process. A codebook was developed after reviewing the reflections and two independent investigators coded each of the reflections. Discrepancies in coding were resolved through a process of consensus. Themes were developed through discussion, consensus and referring to original data. Results: A total of 339 student reflections were analyzed across four institutions (University of Pittsburgh n=106, University of Buffalo n=84, Drake University n=60, University of Iowa n=89). Four consistent themes were identified: (1) group reflection and discussion reinforced key SDOH learning points, (2) photovoice activities helped connect societal inequities with their impact on health and quality of life, (3) photovoice activities increased student understanding of the impact of SDOH on patient care, and (4) reflections addressed downstream interventions, such as direct health support, to address SDOH without significant consideration on structural factors at the community, institutional or policy levels.
Conclusions: Students reported improved awareness of the SDOH following the photovoice activity, particularly underscoring the learning associated with the group debrief. While students gained awareness of the SDOH they had difficulty identifying structural strategies to address SDOH, highlighting the need to provide continued education in this area.

Quantifying the Didactic Curricula at Accredited Schools of Pharmacy in the United States
Azita H. Talasaz, Virginia Commonwealth University, Krista L. Donohoe, Virginia Commonwealth University, Benjamin Van Tassell, Virginia Commonwealth University, VCU Curriculum Investigators, Virginia Commonwealth University. Objective: To determine the curricular hours devoted to specific content areas at accredited Schools of Pharmacy in the United States. Methods: A cross-sectional analysis of the publicly available didactic curricula from all Schools of Pharmacy accredited by the Accreditation Council for Pharmacy Education (ACPE) in the United States was performed. Reviews of 4-year programs included only the first 3 years; reviews of 6-year programs included only years 3 through 5. All courses were categorized into the following content areas: Integrated Courses/Drug Therapy, Clinical Skills, Social and Administrative Sciences, Physiology/Pathophysiology, Medicinal Chemistry, Pharmacology, Pharmacogenomics, Pharmaceutics, Pharmacokinetics, Scholarship, Experiential, and Electives. Each program was reviewed by 3 independent evaluators. The results from all three reviewers were then reviewed for consistency by two independent evaluators. The final values determined by consensus. Results: Curricular details were available from 140/144 programs with four schools excluded due to full integration of their curriculum and/or unavailable public information. The following median (interquartile range) credit hours for each topic were observed: Total Credits = 108 (102-113); Integrated Courses/Drug Therapy = 34 (27-40); Clinical Skills = 12 (8-14); Social and Administrative Sciences = 15 (12-18); Physiology/Pathophysiology = 6 (3-9); Medicinal Chemistry = 6 (3-9); Pharmacology = 4 (1-8); Pharmacogenomics = 1 (0-2); Pharmaceutics = 6 (4-7); Pharmacokinetics = 4 (3-6); Scholarship = 5 (3-6); Experiential = 8 (6-10); and Electives = 6 (5-9). Conclusions: This mapping process is the first publicly disseminated description of curricular topics across all ACPE-accredited Schools of Pharmacy. These results may be useful as a benchmarking snapshot to describe curricular norms, to differentiate the didactic “phenotypes” of individual programs, or to inform the design of future pharmacy curricula.

Refinement and Administration of a Script Concordance Test to Assess Clinical Reasoning Skills
Lydia C. Newsom, Mercer University, Jill M. Augustine, Mercer University, Kathryn Momary, Mercer University. Objective: A script concordance test (SCT) is an innovative assessment that compares student and expert responses to assess clinical reasoning skills. The objectives of this study were to develop and refine an SCT to assess clinical reasoning skills of third year student pharmacists (P3) and to use an SCT to compare clinical reasoning skills of P3 students, fourth year student pharmacists (P4), and pharmacist experts. Methods: An SCT, with 20 vignettes with three questions per vignette (n = 60), was created and administered to P3 student pharmacists and revised using Rasch analysis. The following academic year, the SCT was administered to P3s, P4s, and a group of pharmacist experts comprised of nationwide state-licensed pharmacists actively providing patient care. Results: In year one, an SCT with was administered to 139 P3s. Rasch analysis revealed a test reliability of 0.34 with mean square values for all items between 0.7 and 1.3. Forty-two questions had a difficulty score between 0 and −1 logits, indicating there were multiple questions with similar difficulty levels. Two case vignettes and 43.3% of questions (n = 26) were revised to enhance clarity and decrease ambiguity. A total of 282 students (n = 148 P3 and n = 134 P4) and 49 experts took the revised SCT in year two. Test performance was 70.9%, 72.6%, and 74.8% for P3s, P4s, and pharmacist experts, respectively. Pharmacy experts performed significantly higher on the SCT when compared the P3 students (p<0.05). Conclusions: An SCT is a useful tool that can be created and revised by faculty to assess clinical reasoning ability in student pharmacists.

Relationship between Work Ethic, Anxiety, Self-Efficacy Attitudes on SOAP Documentation Skill using Structural Equation Model
Courtney L. Bradley, High Point University Fred Wilson School of Pharmacy, Sun Lee, High Point University, Julie B. Cooper, High Point University, Sarah M. Anderson, High Point University, Christina H. Sherrill, High Point University. Objective: SOAP note documentation is challenging for students with faculty observations of some students struggling repeatedly while others produce quality work after initial instruction and feedback. We sought to understand contributing factors to student success for this critical healthcare skill. This study hypothesized that SOAP note performance would be impacted by work ethic (positively), anxiety (negatively), and
self-efficacy attitudes (mediating factor between work ethic, anxiety and performance). **Methods:** Structural model assessment was used to test the hypothesized theoretical framework, including relationships between work ethic, anxiety, self-efficacy attitudes on SOAP note writing, and SOAP note documentation performance. At the beginning of the Fall 2021 semester, second- and third-year student pharmacists completed three questionnaires: Multidimensional Work Ethic Profile (28-item validated measure for work ethic), Worry and Anxiety Questionnaire (11-item validated measure for anxiety), and Self-efficacy Attitudes (18-item investigator-developed measure for self-efficacy and attitudes on SOAP notes). Grade performance was collected for the final SOAP note of the semester. Complete case analysis was used, and data was analyzed using Stata Version 17. **Results:** Data included survey responses from 108 (90.8% response rate) second- and third-year student pharmacists. With no statistically significant difference in baseline characteristics, pooled analysis was utilized (p>0.05). Self-efficacy attitudes had no mediating effect on SOAP note grades (p=0.43). A direct, positive relationship was observed between work ethic and SOAP note grades (p=0.02). A trend of a negative relationship was observed between anxiety and SOAP note grades (p=0.34). **Conclusions:** Findings indicate that self-efficacy attitudes do not play a mediating role on SOAP note performance. Work ethic may be a positive contributing factor to performance. Future work will assess formative feedback interventions on this structural relationship model.

**Remote Versus Onsite Learning: A Retrospective Review on Student Achievement and Academic Integrity**

Jenny Van Amburgh, *Northeastern University*, Kyle Lee, *Northeastern University*, Jennie Hellmuth, *Northeastern University*. **Objective:** The COVID-19 pandemic forced many educational institutions, including Northeastern University, to abruptly shift learning and assessment processes from in-person to remote formats. The impact on student learning in these revised learning environments required evaluation. We examined the academic performance between in-person versus remote assessments for six cohorts of P2 and P3 students in a four semester therapeutic course series (CDM) over a five-year period and the teaching modality was comparable. The course series covers patient evaluation; identification of drug-related problems; pathophysiology; and clinical management of disease. **Methods:** Retrospective study comparing in-person versus remote CDM exam score means from 12 exams for six cohorts of students graduating 2018-2023. Data was sorted by cohort and each exam was compared to corresponding exams from other cohorts. In-person cohorts were used as the control. Exam score means and distribution of grades were compared using one-way ANOVA and non-parametric Kruskal-Wallis H tests. **Results:** Statistically significant differences were found between exam scores with remote learning compared to those taken in-person (p<.05). Exam means were 5.4 (+/- 2.1) points higher and the number of higher letter grades earned (A or A-) increased 47.65% vs. 20.55% (p< 0.05) in remote classes compared to in-person. A mixed cohort (had exams in-person and remote) followed the same academic performance trends as observed in the fully in-person or remote. **Conclusions:** Evidence from exam scores show that student exam scores taken remotely were statistically significantly increased when compared to in-person exam data. However, the same cohorts showed regression back to in-person mean exam scores when they returned to in-person assessments bringing into question academic integrity of remote assessment.

**Representation of Diversity, Equity, and Inclusion Content on Doctor of Pharmacy Program Websites**

Heather R. Vande Kieft, *Creighton University*, Diana Rojas-Chavez, *Creighton University*, Hussein Awjama, *Creighton University*, Kevin T. Fuji, *Creighton University*. **Objective:** To describe diversity, equity, and inclusion (DEI) content included on the websites of pharmacy programs in the United States (U.S.). **Methods:** A cross-sectional study design consisting of a website review was used to evaluate all fully-accredited Pharm.D. programs in the U.S. (n=138) in December 2021-February 2022. A form was developed to collect the following information: program name, program website, public vs. private, and if DEI content was present on the program website. If DEI content was present, the location of the content and number of clicks to reach the content was documented. All websites were reviewed independently by at least two researchers. The researchers then met to resolve discrepancies and completed a final review form for each program. Data was analyzed descriptively with frequency counts and percentages. Presence of DEI contact was also analyzed by public vs. private status using a chi-square test with a significance level set at p≤0.05. **Results:** Exactly half of all pharmacy programs (n=69) provided DEI content on their website. Forty-two of the 69 (60.9%) programs had this content in an “About Us” or similar type of location on their website, and the median number
of clicks to reach this content was two (range: 0-4). Significantly more public programs had DEI content on their websites (n=41, 58.6%) compared to private programs (n=28, 41.2%) (p=0.041). **Conclusions:** Websites are the public-facing portals for representing the values of a pharmacy program. Despite DEI being a larger focus nationally, only half of accredited programs had DEI content on their program website. Future research should focus on the optimal ways to present this content to applicants and current student, and examine reasons for differences between public and private programs.

**Retrospective Evaluation of Quiz Performance When Studying with TikTok and Flashcards Versus Flashcards Alone**

Elizabeth A. Hall, *The University of Tennessee*, Karl R. Kodweis, *University of Tennessee Health Science Center, College of Pharmacy*, Andrea S. Franks, *The University of Tennessee*, Amy E. Hall, *UTHSC Teaching and Learning Center*, Joanna Q. Hudson, *The University of Tennessee*, Dawn E. Havrda, *The University of Tennessee*. **Objective:** To evaluate the impact of using flashcards versus flashcards plus student-created TikTok videos as study tools to learn top 300 drug information. **Methods:** This was a retrospective cohort study that included second-year student pharmacists (n=169) enrolled in two sequential, integrated courses during the fall 2021 semester. The first course used only flashcards (McGraw Hill 2022/2023 Top 300 Pharmacy Drug Cards, 6th Edition) as a study tool while the second course used flashcards and optional, student-created TikTok videos as a study tool. Both courses include quizzes (6-7 quizzes per course with 5 questions per quiz) to assess top 300 drug knowledge, and all quiz questions come from a single question bank. To evaluate the effect of TikTok videos and flashcards versus flashcards alone on a student’s ability to learn top 300 drug information, median quiz scores were compared between the two sequential courses using a Wilcoxon signed-rank test (a priori α=0.05). **Results:** A total of 115 students (68.0%) used the TikTok videos in their study efforts for the second course. The median quiz score was lower in the course that used only flashcards as a study tool (median 83.33, IQR 76.67-90.00) as compared to the course that included TikTok as a study tool option (median 88.00, IQR 80.00-92.00). A significant improvement in student pharmacists’ quiz performance was noted when TikTok was included as a study tool option in the second course (p<.001). **Conclusions:** Creating and viewing TikTok videos may help student pharmacists learn foundational content such as top 300 drug facts.

**Review of Imposter Phenomenon Across Health Disciplines**

Dylan McWilliams, *Ohio Northern University*, Karen Kier, *Ohio Northern University*, Jessica Hinson, *Ohio Northern University*, Mitchell Block, *Ohio Northern University*, Maxim Smith, *Ohio Northern University*. **Objective:** Evaluate the literature related to imposter phenomenon (IP) in health disciplines to understand the current status of the research. IP occurs among high achieving individuals who have difficulty internalizing and accepting their successes and often attribute their accomplishments to chance rather than ability. Many individuals with IP fear that others will eventually view them as a fraud. Studies have been documented in medical, nursing, dentistry, and veterinary practice regarding IP, but there is a gap in knowledge regarding pharmacy. **Methods:** A narrative review of IP in health professionals was completed using Academic Search Complete. Medical subject headings (MeSH) included imposter phenomenon or syndrome with medical personnel or health workers for the overall search. IP was independently searched with the key terms physicians, nursing, pharmacy, dental, and veterinary. The IP with medical was then narrowed to studies. **Results:** The MeSH search with IP and medical personnel resulted in 167 articles. IP with specific medical professionals resulted in 8 pharmacy articles, 116 for nursing, 3 veterinary, 15 dental, and 241 for physicians. After an analysis for duplicates, study design, and relevance, the results included 3 for pharmacy, 10 for nursing, 1 for veterinary, 2 for dental, and 18 for physicians. **Conclusions:** Although IP has been recognized since 1978, 93% of the health professional studies have been completed after 2020. The literature is primarily review articles or editorials discussing the need for research and solutions with limited studies. Of the research, greater than 99% are evaluating the existence of IP in health disciplines with less than 1% offering research on solutions for IP. Future research should focus on mechanisms to improve IP in health professionals including pharmacy.

**Self-Paced Video Recordings as Assessment of Patient Counseling Skills and Confidence in First-Year Pharmacy Students**

Lauren R. Biehle, *University of Wyoming*, Jaime Horneck, *University of Wyoming*, Tracy D. Mahvan, *University of Wyoming*. **Objective:** The objective of this research is to evaluate the use of a novel video recording assessment on pharmacy student knowledge and confidence in presenting an evidence-based recommendation to theoretical patients and compare it to traditional assessment methods. **Methods:** First-year students in a self-care therapeutics course were assigned a quiz assessment.
utilizing VidGrid technology. Students self-recorded a video on patient education for over-the-counter proton pump inhibitor therapy. Students completed a post-video assessment survey evaluating their opinions on the utilization of videos as an assessment method and their confidence in patient counseling and the subject matter using a Likert scale. Results: Twenty students submitted video assessments and eighteen students consented to and completed the survey. The majority of respondents agreed or strongly agreed that the video assessment improved their understanding of patient counseling (89%), the topic (66%), and it reinforced concepts discussed in lecture (83%). More than half of students (61%) agreed that the assessment improved their confidence in patient counseling. Half of respondents were neutral regarding their preference of the use of video assessments compared to traditional quiz questions. Conclusions: Videos can be used as a unique assessment method which enhances learning and improves student comprehension of a topic. Additionally, this video assessment improved student confidence in patient counseling. Anecdotally, video assessments provide logistical advantages in terms of scheduling, allow for greater self-paced learning and provide students opportunity to review and revise their video performance prior to submission. This research also supports other studies which show video assessments enhance time spent on new application concepts.

Show What You Know: Assessing Potential Predictors for Success in a Pharmacy Calculations Course

Sara Trovinger, Manchester University, Holly Robison, Manchester University, Sarah Iskander, Manchester University. Objective: To determine if preadmission math GPA, preadmission Health Science Reasoning Test (HRST) score, or results of an algebra-based pretest correlate with overall grades for a first-year pharmacy calculations course. Additionally, ascertain if these data points predict student success in the course. Methods: During the admission process, math GPA data and performance on the HRST was collected for all students. Additionally, all first-year students were required to take an 18-question algebra-based pretest the week prior to classes commencing. Pharmaceutical calculations is a required course for all first-year students during the fall semester. The course consisted of weekly lecture and recitation sessions and was assessed using weekly quiz, homework and recitation assignments in addition to three exams. Exams made up the majority (80%) of the grade. Success in the class was defined as earning at least 69.5% in the class prior to any remediation activities. Data was evaluated via linear regression and chi-square tests as appropriate. Results: Data was collected and analyzed for 45 students. Seven of these students had not earned a passing grade at the end of the class. The algebra-based pretest most closely correlated with overall grades (R2=.3602). Math GPA and HSRT scores showed less correlation (R2=.1601 and R2=.1862 respectively). The following characteristics were independently associated with statistically significant increased pass rates for the class: HSRT score 80 or more (p=.047), pretest score of 14 or greater (p=.035), math GPA greater than 2.8 (p=.009). Conclusions: The use of an algebra-based pretest appears to correlate with overall course grades. In addition, the use of the HRST, preadmission math GPA, and algebra-based pretest may all serve as predictors of student success in a pharmacy calculations course.

Simulating the Inpatient Pharmacists’ Reality: Order Processing for the Novice

Celeste Voight, University of Findlay, Suzanne Surowiec, University of Findlay. Objective: To evaluate student perceived preparedness and confidence when utilizing electronic health record (EHR) technology to review inpatient medication orders and to provide a verbal recommendation to a healthcare provider. Methods: Third year pharmacy students were enrolled in a required skills-based laboratory course during fall semesters 2020 and 2021. This educational series encompassed 3 days of class and a total of 9 hours of instruction. Incorporation of EHR technology was designed to simulate the sequence of tasks an inpatient pharmacist completes when a medication-related problem is identified. Students completed a chart review in a mock EHR system with one to two known problems in the medication orders section. Once the problem(s) were identified, students phoned the prescriber to provide an alternative recommendation utilizing the SBAR (situation-background-assessment-recommendation) method. Students completed a pre- and post-class survey to assess their level of preparedness and confidence with these skills. The Mann Whitney U test was conducted to determine statistical significance. IRB approval was granted. Results: A total of 89 students across two cohorts (99%) completed the pre-survey; 31 students (34%) completed the post-survey. Comparison of pre- and post-survey scores resulted in significant findings for all categories: perceived preparedness, efficiency, and accuracy when processing or reviewing a medication order (p<0.001); increased efficiency and efficacy when utilizing EHR technology (p<0.001); increased efficiency (p<0.001) and efficacy (p<0.001) when providing a verbal recommendation to a healthcare provider. This simulation promoted the development of critical thinking skills in an
educational setting, however, students’ perception levels were subjective in nature. **Conclusions:** Incorporating a series of EHR-based activities simulating medication order processing and provider communication into the PharmD curriculum positively impacts student perceived preparedness and confidence.

**Student and Faculty Perspectives on an Adaptation to Cross-Campus Groups for a Case-Based Learning Course**

Angharad Ratliff, Idaho State University, Glenda Carr, Idaho State University, Nathan Spann, Idaho State University, Cathy Oliphant, Idaho State University, Shanna O’Connor, South Dakota State University. **Objective:** As a result of the COVID-19 pandemic, our multi-campus College of Pharmacy modified its case-based learning series from an in-person, single-campus design to a virtual, cross-campus design. This change was necessitated by the restrictions placed on in-person instruction but also provided equal opportunities for students from geographically distinct campuses. The objective of our study was to assess student and faculty perceptions of the course change to inform future delivery options for the course series. **Methods:** Two questionnaires were developed, one for student perception of the change in course delivery method and one for faculty perception. Questionnaires contained 14 prompts to address the impact the course delivery change had on interaction with other students and faculty as well as relationships with students on other campuses. Questionnaires were created using online form generators and administered at the end of the Fall 2020 semester. Data was analyzed using descriptive statistics and graphically depicted by grouping respondents by their preferred method for future delivery of the course. **Results:** The questionnaire was disseminated to 82 students and had an overall response rate of 40.2%. Students responded positively to the transition to online learning with 63.6% preferring cross-campus groups for future course delivery. Students responded favorably to the statements regarding increased interaction, communication and connection with students on other campuses. Of the twelve faculty provided the questionnaire, eight responded. Faculty responses were more varied than student responses. **Conclusions:** Based on the findings of these questionnaires, our College of Pharmacy will continue with cross-campus Zoom® delivery for this case-based learning series for all levels of students.

**Student Evaluation of Self-Care Mobile Health Apps in a Large, Required Course**

Nikhil Sangave, MCPHS University- Boston, Lana Dvorkin Camiel, MCPHS University- Boston, Jennifer Prisco, MCPHS University- Boston, Maria D. Kostka-Rokosz, MCPHS University- Boston, Jana Murry, MCPHS University- Boston, Jennifer Goldman, MCPHS University- Boston. **Objective:** To ascertain how many students are currently using and recommending digital health apps and provide standardized means for all students to evaluate mobile health apps and improve confidence in digital health topics. **Methods:** Through an introductory session and weekly exercises, students were introduced to mobile health apps in self-care areas and provided a standardized, validated ASHP rubric to evaluate apps. The rubric assessed the following criteria in each app – usefulness, accuracy, authority, objectivity, timeliness, functionality, design, security, and value. Qualtrics software was utilized to gather and analyze data prior to and after the course completion. **Results:** Of 256 students enrolled, 248 consented to participation. At the beginning, students reported using/recommending to friends/recommending to patients the following apps: Exercise trackers (48%/21%/6%), Period/Ovulation trackers (34%/22%/7%), Diet trackers (32%/20%/6%), Sleep trackers (28%/20%/6%), Meditation guides (23%/13%/5%), Fluid trackers (14%/11%/6%), Drug information apps (35%/17%/8%), Medication reminders (12%/19%/16%) and Symptom trackers (25%/13%/6%). Students reported (before/after the course) being confident evaluating mobile health apps (33%/84%), having a system for evaluating mobile health apps (17%/75%), being aware of a standardized way to evaluate mobile health apps (23%/81%). The majority (69%) reported interest in a digital health pharmacy curriculum requirement. Students were comfortable recommending apps (before/after the course): to friends (72%/88%), colleagues (63%/77%) and patients (57%/65%). **Conclusions:** More than one-third of students had some exposure to mobile health apps. From this exercise, confidence in evaluating apps significantly increased. Our future goal is to demonstrate how mobile health apps can be integrated into clinical practice.

**Student Perceptions of Educational Equity in a Doctor of Pharmacy Program at a Private University**

Anna Nogid, Long Island University, Fatima Amjad, Long Island University, Muhammad Al-Rababah, Long Island University. **Objective:** To describe pharmacy student perception of equity in a classroom setting at a private college of pharmacy. **Methods:** A 28-item survey was constructed to gather student perceptions on whether the current large and small classroom environment is fair, inclusive, and provides students the support and resources to achieve academic goals. The survey instrument was
administered to first-, second-, and third-year doctor of pharmacy students (N = 580). Students were asked to rate their level of agreement with various statements using a four-point Likert scale on which 1 = strongly disagree and 4 = strongly agree. Results: Overall, participants felt the classroom environment was inclusive (86.32%) and the instructor treated students fairly (89%). Mean Likert scale scores were higher for the small group learning environments compared to the large, didactic lecture classrooms: Students felt comfortable speaking up (3.3 vs. 2.9, p<.05), approaching faculty with a concern (3.4 vs 3.2, p<.05), felt they had sufficient resources to succeed (3.4 vs 3.2, p<.05), and felt comfortable asking for additional resources (3.4 vs. 3.1, p<.05). 26.3% of participants indicated a need for additional resources. Suggested resources included tutoring opportunities and additional practice questions. Results did not differ by GPA, gender, age, and ethnic background. Conclusions: Students perceive equity differently in the small and large learning environments. Understanding students’ perceptions of equity may assist faculty in developing best practices in inclusive pedagogy, creating equitable classroom environments, and ensuring students have the resources to succeed.

Student Perceptions of Utility of TikTok as a Tool for Learning Top 300 Drugs
Andrea S. Franks, The University of Tennessee, Amy E. Hall, UTHSC Teaching and Learning Center, Carl R. Kodweis, University of Tennessee Health Science Center, College of Pharmacy, Elizabeth A. Hall, The University of Tennessee, Joanna Q. Hudson, The University of Tennessee, Dawn E. Havrda, The University of Tennessee. Objective: To assess student perceptions of educational value and the impact of creating and/or watching TikTok videos to learn Top 300 drug facts. Methods: Second-year student pharmacists (n=169) were given the option to create and watch TikTok videos to supplement studying flashcards to learn Top 300 drugs. Student perceptions were evaluated via a 14-question post-survey including both Likert-scale and open-ended questions followed by focus groups. Likert-scale items were analyzed using descriptive statistics, while written responses were analyzed using thematic analysis. After the post-survey was analyzed, students participated in two focus groups to further explain the effects of using TikTok videos. Transcripts were analyzed using a thematic analysis and compared to the open-ended survey results. Results: Completed surveys were submitted by 97% of students. Most of the class reported creating (65.2%) or watching (70.1%) the videos. The majority of students (83.5%) who watched the videos enjoyed learning the drug facts using this strategy, while 65.2% agreed or strongly agreed that studying videos helped their learning. When asked about the impact of creating videos, 57.5% reported that their learning was strongly or significantly impacted. Thematic analysis revealed that students perceived that creating TikTok videos was most helpful in facilitating the memorization of their assigned drug due to repetition and associations necessary to make effective videos. However, students found creating videos to be time consuming and challenging due to lack of TikTok expertise. Students recognized that watching student-developed videos can be a fun alternative to studying flashcards alone and that associations made it easier to memorize. Conclusions: Creating and viewing TikTok videos may be a tool to facilitate student pharmacist learning of Top 300 drug facts.

Student Perceptions on the Use of Standardized Patients for Skills Assessment in Pharmacy Practice Labs
Akash J. Alexander, Long Island University, Fraidy N. Maltz, Long Island University, Brooke D. Fidler, Long Island University. Objective: To determine student perceptions and preferences on the use of professionally trained standardized patients (SP’s) in comparison to APPE students, residents, and faculty (academic professionals) for formative training and summative evaluation of communication skills. Methods: Second- and third-year students enrolled in pharmacy practice laboratory courses took part in a formative training session led by academic professionals. This was followed by a summative assessment utilizing SP’s. Students then completed a survey assessing their perceptions and preferences with two optional open-ended questions seeking feedback on strengths and potential areas for improvement for the activity. Results: 329/359 (91.6%) of eligible students provided consent and participated in the study. 93.6% of respondents agreed that formative sessions with academic professionals benefited their learning and skills development. With respect to formative assessment, 21.6% of students felt that they could benefit by interacting with an SP, 35.6% indicated a preference for an academic professional, and 42.6% stated no preference. For summative assessments, 31.6% of participants stated preferences towards interacting with SP’s, 28.9% favored academic professionals, and 39.3% indicated no singular preference. Conclusions: Students did not show a preference for working with either professionally trained SP’s or academic professionals. Based on the optional open-ended questions, students felt the overall simulated encounter provided a realistic experience with constructive feedback.
Student Pharmacists’ Attitudes and Knowledge of Social Determinants of Health in Ambulatory Care Experiential Setting

Elif Ozdener-Poyraz, Fairleigh Dickinson University, Julie Kalabalik-Hoganson, Fairleigh Dickinson University, Antonia Carbone, Fairleigh Dickinson University, Deryan Coba, Overlook Medical Center. Objective: Accreditation Council for Pharmacy Education (ACPE) Standard 3 includes social determinants of health (SDOH), however there is a lack of comprehensive SDOH coverage in the pharmacy curriculum. The objective of this study was to measure P4 students’ attitudes and knowledge of SDOH through a pre- and post-activity survey. Methods: Students in their ambulatory care Advanced Pharmacy Practice Experience (APPE) rotation were administered a pre-activity survey assessing their attitude and knowledge of SDOH. Later, students worked with a community health worker (CHW) who specializes in addressing SDOH in patients. Students took the same survey after the activity. Surveys were administered using Qualtrics XM, responses were anonymous, and students could skip questions. Descriptive statistics was used to summarize results. Results: Nine students participated in the study. Thirty-eight percent (3/8) and 89% (8/9) strongly agreed they understood the definition of SDOH in the pre- and post-activity survey, respectively. Fifty percent (4/8) and 100% (9/9) strongly agreed they understood the impact of SDOH on health outcomes and pharmacists can address SDOH in the pre- and post-activity survey, respectively. Understanding the role of a CHW increased from zero (0/9) to 89% (8/9) in the pre- and post-activity survey, respectively. Identification of SDOH increased from 13% (1/8) to 56% (5/9) in the pre- and post-activity survey, respectively. Sixty-three percent (5/8) correctly identified questions asked in a SDOH screening tool in both the pre- and post-activity survey. All respondents (8/8) correctly identified social programs available to address problems with housing instability, food insecurity, and medication affordability in both surveys. Conclusions: There was a positive change in student pharmacists’ attitudes towards and knowledge of SDOH after the interdisciplinary activity with the CHW.

Student Pharmacists’ Classroom Training on Awareness and Management of Difficult Conversations

Alexa J. Powell, Washington State University, Kavya Vaitla, Washington State University, Kimberly C. McKeirnan, Washington State University, Megan N. Willson, Washington State University. Objective: To assess student pharmacist awareness of personal stigma, bias and comfortability managing difficult conversations on medication errors and sensitive topics with communication tools. Methods: Second-year students enrolled in a patient laboratory course received a two-part training on identification and management of bias, microaggressions, guilt and shame in the context of difficult conversations. A survey was administered pre-training to assess student pharmacists’ self-perceived awareness of stigma, prejudice, unconscious bias, and comfortability having difficult conversations. Following in-class discussions regarding identification of microaggressions, students completed reflections on lessons learned and perceived impact. In part two of training, students utilized a communication tool to roleplay medication error disclosure with peer feedback. Independent plans were then submitted for disclosing an error in a prespecified scenario. Results: Pre-training surveys were completed by 88 out of 97 students. Most students (60.6%) reported some level of awareness of treating patients differently. Some reported somewhat to minimal awareness of held stigmas (33.7%) and prejudices (26.7%). Most students (79%) reported feeling comfortable admitting their mistakes, but only 56.9% felt comfortable having difficult conversations with patients. Of the 77 reflections submitted, the majority showed that students felt they better understood how to address microaggressions and biases and felt more comfortable identifying it in themselves. From the 82 submitted medication error disclosure plans, 36 students (44%) utilized the communication tool from the training. Conclusions: Overall, pre-survey data showed the need for educating students on stigmas, biases and practicing having difficult conversations. While qualitative reflections and plans submitted cannot objectively show the improvement in awareness and comfort initially assessed, they do demonstrate that similar trainings with group discussions and roleplays may be beneficial in this regard.

Students’ Performance and Perceptions of Mock-Trial as Teaching-Assessment Activities over 3-Years at Two Institutions

ETTIE Rosenberg, West Coast University, Hoai-an Truong, University of Maryland Eastern Shore, Shih-Ying (Audrey) Hsu, West Coast University.edu, Reza Taheri, Chapman University. Objective: To evaluate students’ performance and perceptions of a mock trial as a teaching-learning and assessment activity over three-years at two institutions. Methods: Implementation of a mock-trial (courtroom-style debate) developed previously, continued as a teaching/learning/assessment activity in a required first professional-year course at two institutions from 2017-2019. Mock-trial design offered student-participants opportunities for literature critique and evaluation, critical
thinking, communication, teamwork, professionalism and self-awareness. Cohorts divided into teams, were assigned controversial topics to research and debate in a mock-trial at the end of semester. Student-participants assumed trial roles either as counsels, witnesses, or as jurors in alternate trials. Descriptive analyses were performed for judges’ and jurors’ scores, as well as for the Technology Acceptance Model (TAM) survey completed by 2019 student-participants. Results: Three hundred and nineteen students participated in mock-trials from 2017-2019 (Program A: 136; Program B: 183). Faculty-judges’ evaluation scores over the 3-year span ranged from 83.3% to 97%, and student-jurors’ evaluation scores ranged from 87.5% to 100%. Faculty-judges’ scores and student-jurors’ scores were comparable between Programs A and B for most student groups, irrespective of trial positions and topics. In 2019, 96 student-participants surveyed, offered perspectives on using Blackboard Collaborate® for peer-collaboration. Questions assessing students’ attitude about mock-trial participation reported an average rating above 5 on a 7-point Likert Scale. Conclusions: Evidence from a three-year retrospective review of students’ performance and perceptions of a mock-trial as a teaching-learning and assessment activity at two institutions demonstrates sustainability and adaptability of the mock-trial innovation and cross-institutional faculty collaboration.

Teaching Criteria in Promotion and Tenure Guidance Documents of United States Pharmacy Schools

Benjamin A. Quattlebaum, University of Arkansas for Medical Sciences, Kaci Boehmer, University of Arkansas for Medical Sciences, Amy Franks, University of Arkansas for Medical Sciences. Objective: To systematically evaluate teaching-related criteria within promotion and tenure (PT) guidance documents of US pharmacy schools. Methods: PT guidance documents were obtained via websites of US pharmacy schools or requested by email. The institutional characteristics from each school were collected from public online data. Qualitative analysis was conducted on the collected documents to systematically catalogue PT criteria. Results: PT guidance documents from 121 (83%) of 145 pharmacy schools were analyzed. Nearly half (49%) of schools included didactic teaching criteria within PT guidance documents, while few included experiential (8%), graduate (11%), postgraduate (8%), or interprofessional (2%) teaching. Few schools included quantitatively or qualitatively defined requirements by which faculty may self-assess their performance (e.g., number of teaching hours required, 6% of schools). Documents instead most frequently provided lists of possible, rather than required, criteria. Nearly half (n=56, 46%) of schools required faculty to achieve excellence in at least one area of their work; of these, 48 (86%) included teaching as a component of this excellence requirement. Only 14% of schools defined how to demonstrate excellence. Conclusions: We found wide variability in teaching-related requirements and a relative lack of quantitatively- or qualitatively-defined teaching-related requirements included within PT guidance documents from schools of pharmacy. The results of this comprehensive evaluation can be used by institutions to consider how PT guidance documents with clearly defined criteria can assist both faculty in their pursuit of successful career advancement as well as PT committees to fairly and objectively evaluate promotion candidates’ dossiers.

The Effect of a Pharmacist-led Antibiotic Stewardship Program in a Federally Qualified Health Center

Arinze Nkemdirim Okere, Florida A&M University, Ukamaka Smith, Florida A&M University, Vassiki Sanogo, Northcentral University, Clyde Brown, Florida A&M University. Objective: We evaluated the effect of an antibiotic stewardship program (ASP) on providers antibiotic prescribing behavior (APB) and the 30-day frequency of clinic visits associated with infectious diseases in a Federally Qualified Health Center (FQHC). Our central hypothesis is that ASP will improve APB and decrease the frequency of 30-day clinic visits. To test our hypothesis, we used interrupted time series analysis - a robust approach for testing an intervention effect when a randomized controlled study is not feasible. Methods: We conducted a nonrandomized, quasi-experimental study from November 2019 to June 2021 in an FQHC located in Florida. Before implementing ASP, providers’ antibiotic prescriptions were directly sent to the pharmacy for dispensing. Therefore, we integrated ASP services as part of our medication therapy management services and then conducted pre-and post-intervention analyses. We assessed the following outcomes: 1.) antibiotic prescribing behavior defined as antibiotic prescriptions per 1000 patients (AP/1000) and the rate of change in antibiotic prescriptions within 15 days 2.) frequency of 30-day clinic visits for infectious diseases. For analysis, we used weighted propensity score matching before using the pre-and post-interrupted time series modeling adjusted for COVID-19 period and seasonality. Results: The ASP intervention led to reduction in AP/1000 (change in slope [long-term effect] = - 0.175, P < 0.004) and the rate of change of antibiotic prescriptions within 15 days (change in slope = -0.065, P < 0.027). Additionally, The ASP intervention led to decreased reduced frequency of 30 day clinic visits (change
in slope = -0.065, P < 0.027). Conclusions: ASP is associated with improvement in the antibiotic prescribing behavior of healthcare providers and a reduction in preventable 30-day clinic visits associated with infectious disease.

The Impact of an Innovative Virtual Patient Case Model on Pharmacy Student Perceptions and Preferences

Rachel Ryu, Western University of Health Sciences, Hyma P. Gogineni, Western University of Health Sciences College of Pharmacy, Eunice Chung, Western University of Health Sciences, Doreen Pon, Western University of Health Sciences College of Pharmacy. Objective: To assess students’ perceptions on Virtual Interactive Academic Learning (VIAL) cases in an integrated Doctor of Pharmacy course. Methods: The study investigators conducted this study in 2nd-year Doctor of Pharmacy (PharmD) students. After a sample virtual case was demonstrated by the course faculty facilitators, case 1 was completed in all student teams using the virtual format. For case 2, teams were randomly assigned to receive either the virtual or paper-based case. For case 3, teams who completed the virtual case for case 2 completed the paper-based case for case 3, and vice versa. After the 3 cases, surveys were distributed to characterize student preference for virtual cases. Results: All of the participating students (n=123) completed the cases and survey. Overall, students agreed that VIAL cases helped them initiate a realistic patient interview (88%), develop stronger patient history-taking skills (77%), identify pertinent patient case information (70%), and guide students in approaching a patient case with a systematic approach (76%). However, more students expressed preference for paper-based cases compared to virtual cases (78.9 vs 21%). Excerpts from student surveys revealed that while students were open to virtual cases, found them engaging, and understood the potential value of them, they hoped that technical issues would be resolved soon. Conclusions: Overall, in our pilot study to assess students’ preference for virtual cases, students expressed generally positive feedback with VIAL, as long as the technical challenges were improved. The authors plan to expand the study to assess student preferences and performance to characterize the impact of virtual cases on student competency and learning.

The Impact of Synchronous Hybrid Instruction on Students’ Engagement in a Pharmacotherapy Course

Russell Palmer, University of Georgia, Morgan Moulton, Department of Veterans Affairs, Rebecca Stone, University of Georgia, Devin Lavender, University of Georgia, Michael J. Fulford, The University of Georgia, Beth Phillips, University of Georgia. Objective: to evaluate (1) if students were more likely to actively engage in class when they participated remotely or when they participated face-to-face (FTF) in a Pharmacotherapy course that was delivered using a synchronous hybrid instructional model, and to evaluate (2) the benefits and challenges of the hybrid model for engagement from the students’ perspective. Methods: A likert-scale survey was administered to evaluate if students were more likely to actively engage in class when they participated FTF or when they participated remotely. The Mann-Whitney U test was used to determine differences in mean ranks (FTF vs remote) for each survey item. Additionally, content analysis was performed on open-ended questions using a two-cycle inductive coding process to identify benefits and challenges. Data saturation was achieved and 100% coding agreement was reached among two researchers. Results: Students reported they were more likely to actively listen (p=0.004), avoid distractions (p=0.008), and react emotionally (p=0.045) when FTF. There were no significant differences in student reported note taking, asking questions, responding to questions, or engaging in groupwork. Content analysis identified benefits that supported student engagement, including perceived flexibility and interactive technologies. Challenges that negatively impacted engagement included difficulties with internet connectivity and a sense of isolation in the course. Conclusions: The mixed results in this study demonstrated that when students participated online within the context of a synchronous hybrid pharmacotherapy course, their engagement suffered in some areas, but remained comparable to FTF participation in other areas. Pharmacy educators may look to existing principles from the learning sciences such as flexible learning design and self-regulated learning in order to systematically refine hybrid instruction for the benefit of pharmacy students.

The Menopause and Minority Health Project: Walk a Mile in my VR Shoes

Laura M. Borgelt, University of Colorado Anschutz Medical Campus, Clint Carlson, University of Colorado Anschutz Medical Campus, Helen Coons, University of Colorado Anschutz Medical Campus, Sarah Nagle-Yang, University of Colorado Anschutz Medical Campus, Jill Liss, University of Colorado Anschutz Medical Campus, Phoutdavone Phimphasone-Brady, University of Colorado Anschutz Medical Campus, Nanette Santoro, University of Colorado Anschutz Medical Campus. Objective: To reduce diagnosis and treatment disparities for racially and ethnically diverse individuals experiencing menopause by
improving providers’ knowledge and developing culturally congruent treatment approaches. **Methods:** Several departments at an academic health center partnered with Extension of Community Health Outcomes (ECHO) Colorado, an online network that provides education to community providers about the management of complex medical conditions in underserved populations. The proven ECHO Colorado group learning approach was enhanced with Extended Reality (XR) simulations using diverse avatar patients with emotional responses and compounded interactions to engage a deeper understanding of menopause experiences in minority women. Seven evidence-based modules included: intersectionality; vasomotor symptoms; mood and anxiety; sleep symptoms; bleeding and hysterectomy; weight, body image, and sexual health; and menopause-related treatment. Invited participants were clinicians who care for menopausal women in primary care, gynecological, and behavioral health settings. Prior to each session, providers completed brief pre-and post-test assessments and avatar experiences. Data were analyzed as descriptive statistics. **Results:** In its first offering, 23 participants completed an average of 4.8 modules. In pre-post analysis, participants were better able to diagnose and treat menopause in a culturally competent and sensitive manner (p < 0.01). Most agreed that the XR simulation was easy to use and aided in communication with patients (69% and 54%, respectively). **Conclusions:** The ECHO Colorado learning approach combined with innovative XR simulations yielded positive improvement in provider knowledge, confidence, and treatment of racial and ethnic differences in menopause care. By July 2022, 50 participants are expected to complete the modules. This unique training with XR simulation has the potential to change the landscape of healthcare education for underserved, racially, and ethnically diverse populations.

**The O Factor of Personality and Student Receptiveness to Team-Based Learning**

Alireza Fakhriravari, Loma Linda University, Tomona Iso, Loma Linda University. **Objective:** Team-Based Learning (TBL) is an active-learning strategy widely adopted in health professions education. Although many students are receptive of TBL, some students may prefer traditional lecture (TL) instead. While many factors such as familiarity and prior experience with TL may affect students’ perceptions and attitudes regarding TBL, we hypothesized that personality might also play a role. The aim of this study was to evaluate the relationship between the Openness to experience (O factor of personality) and receptiveness to TBL. **Methods:** We converted our Drug Information and Literature Evaluation course from TL to TBL in the fall of 2018. To evaluate students’ perceptions of TBL, we implemented an anonymous survey that included the HEXACO-100 personality inventory tool, which measures Honesty-humility, Emotionality, extraversion, Agreeableness, Conscientiousness, and Openness to experience. Four cohorts of second-year student pharmacists completed the survey at the end of the course. A regression model was used to evaluate the relationship between personality and receptiveness to TBL. **Results:** About 99% of students participated in the survey (N = 263) and 156 (59%) of them agreed/strongly agreed that they prefer TBL over TL. In regression analysis, Openness factor was significantly predictive of receptiveness to TBL (Odds Ratio [OR] 2.09; 95% Confidence Interval [CI] 1.29-3.45; p = .003). Of the four facets of Openness to experience, inquisitiveness (OR 1.68; 95% CI 1.23-2.33; p = .001) and unconventionality (OR 1.65; 95% CI 1.10-2.51; p = .02) were also significantly predictive whereas aesthetic appreciation (OR 1.32; 95% CI 0.93-1.90; p = .12) and creativity (OR 1.21; 95% CI 0.90-1.64; p = .21) did not reach statistical significance. **Conclusions:** Higher scores of Openness on the HEXACO personality test are associated with higher receptiveness to TBL over TL among second-year students.

**The Techniques of Studying and Other Variables Impact on Initial Drug Card Exam Pass Rates**

Daniel J. Hansen, South Dakota State University, Kyle Shapcott, South Dakota State University, Teresa Seefeldt, South Dakota State University. **Objective:** Examine the studying techniques and variables that are related to higher pass rates on top 200 exams. **Methods:** All P1-P3 students are required to take Top 200 exams within the pharmacy skills lab sequence. The medications are broken down by therapeutic class, with each exam focusing on different information (brand-generic, dosage form, side-effects, etc.) within one class. At the beginning of each semester, faculty provide the students with a breakdown of the material covered on each exam. Students are then expected to study that information on their own, outside of lab. Students take two exams every semester and are required to achieve a score of 80% or they must remediate. A current Pharm.D. Candidate designed a survey that asked a variety of quantitative and qualitative questions, focused on study habits, work experience, perceived value, and material engagement. That same Pharm.D. candidate also created a series of optional quizzes for the P1 students to take in preparation for their Top 200 exam. **Results:** The survey was sent to all current P1-P3 students in Fall 2022, with a response rate of 47.2% (n = 93). Results showed that students (P1-P3) who first engaged
with the study material two or more weeks prior to the exam and P1’s who took two or more of the optional quizzes, were statistically more likely (P=0.03, 0.02 respectively) to receive a passing score (≥ 80%). Other factors, like work history or location, did not show a significant difference in pass rates. Conclusions: When a student engages with the Top 200 material appears to be a strong predictor of success on the exam. Tools like optional quizzes may be one way to incentivize students to engage earlier on.

Tweet it and they will come: Dissemination of an educational hashtag for reflection and learning

Brandon Dionne, Northeastern University, Stephanie Brix, Northeastern University, Stephanie L. Sibicky, Northeastern University, Alexa A. Carlson, Northeastern University. Objective: Social media platforms like Twitter are popular tools for communication, networking, and knowledge sharing. During an infectious diseases APPE rotation, students posted daily tweets about “one thing I learned today” using #OTILT, and the hashtag began to be utilized by learners outside of the rotation. The purpose of this study is to describe how the use of the hashtag spread and the diversification of subject areas using #OTILT. Methods: The user, location, and content of tweets from January 2018-January 2021 using #OTILT were collected using snscrape. Users were separated into three different groups; APPE students/residents on the rotation, former students/residents posting after their rotation was completed, and users who were unaffiliated with the rotation. To analyze the content of the tweets, they were categorized into broad subject areas (eg, infectious diseases, neurology). Results: Of the 2049 tweets from 259 unique users, 1075 (52.5%) tweets and 220 (84.9%) users were unaffiliated with the rotation. In the first year of #OTILT, 87.4% of the tweets came from APPE students/residents on rotation and 12.6% were unaffiliated with the rotation. However, in the second year, 57.8% of the tweets were from users unaffiliated with the rotation, and by the third year, it had risen to 67.0%. The majority of the tweets were about infectious diseases in the first and second year (77.9% and 55.2%, respectively), but infectious diseases was only a plurality by the third year (43.5%). Conclusions: The adoption of #OTILT by users in different settings and subject areas demonstrates the utility of social media for networking and knowledge sharing.

Use of Student Created Podcasts to Promote Collaborative Learning and Teamwork

Jeanne E. frenzel, North Dakota State University, Taylor Bengtson, North Dakota State University. Objective: Student created podcasts were used to foster class engagement with health-system pharmacy topics and promote collaborative learning in a pharmacy skills laboratory course. Methods: Working in teams, students produced a 10-minute podcast in a format of their choice. Students answered sixteen questions evaluating their experience with the podcast project using a 7-point Likert scale (1=strongly disagree to 7=strongly agree). The instrument was used to measure two subscales: communicating using a podcast (5 items, α=.9) and learning using a podcast (9 items, α=.95). Five additional open-ended questions were used to learn more about what students liked or disliked about the project. Descriptive statistics and thematic analysis were used to evaluate the data. Results: All students (N=63) completed the post-survey. Students’ mean score on the communicating using a podcast was (5.3; SD=1.1) and the learning using a podcast was (M=5.6; SD=1.1). Of the 63 students, 44 (69.8%) agreed or strongly agreed that the project improved their teamwork skills and 53 (84.1%) of students agreed or strongly agreed that the project encouraged cooperation among team members. Students responses to the open-ended question indicated that they appreciated the creative nature of the project and working with a team of peers. Conversely, students reported project barriers to include scheduling conflicts and unfamiliarity with creating podcasts. Conclusions: The podcast project was successful in engaging students in learning about health-system pharmacy topics, improving students’ perceived skills in communicating and presenting, and promoted teamwork.

Using Oral Quizzes with Random, Procedurally Generated Questions in a Landmark Clinical Trials Elective

Bryan J. Donald, The University of Louisiana at Monroe. Objective: Upon completion of a Landmark Clinical Trials pharmacy elective, students are expected to know and be able to discuss several landmark studies. Oral quizzes can demonstrate this ability, but comprehensive oral quizzes have a high time cost. An oral quiz format using randomly selected questions was developed to meet this challenge. Methods: Students in the elective are grouped into teams of 4 students each; three oral quizzes are given, covering 8 studies each. During the quiz, teams select cards from a deck with number and suit indicating study and question to be answered. For example, in one quiz the Queen of Spades means students are asked about the results of the NICE-SUGAR study. Questions about results and clinical significance are considered difficult and drawing these affects the total number of questions asked during the quiz. Results: This quiz format has been
successful for five years of the Landmark Clinical Trials elective. Physically drawing cards seems to break up the “divide-and-conquer” approach common to team assignments; the student drawing a card frequently answers together with the student in the team chosen to be the expert for that study. For many questions, especially difficult questions, the entire team participates in answering the question. Each year, students have been given the option to split their grade between written and oral quizzes versus oral quizzes only and have unanimously preferred the oral quiz. Quizzes typically last 10-15 minutes. Conclusions: This oral quiz format holds students accountable for a broad knowledge base and allows them to demonstrate good medication literature skills without a heavy time cost. Students perform well on quizzes and prefer this format to alternatives.

**Using the Pharmacotherapy Didactic Curriculum Toolkit to Enhance Curricular Efficiency**

Krisy Thornby, Palm Beach Atlantic University; Nicole Chimelis, Palm Beach Atlantic University; Deema Gichi, Palm Beach Atlantic University; Adwoa Nornoo, Palm Beach Atlantic University; Elias Chahine, Palm Beach Atlantic University. **Objective:** The purpose of this project is to assess adherence of the Gregory School of Pharmacy’s (GSOP) curriculum to the 2019 American College of Clinical Pharmacy (ACCP) pharmacotherapy didactic curriculum toolkit and provide recommendations to enhance curricular efficiency. **Methods:** Topics taught throughout GSOP’s curriculum were collected from the 2020-2021 pharmacotherapy course syllabi and were compared to topics listed in the ACCP toolkit. Time spent on each topic was also collected to determine the extent of which tier 1, 2, and 3 topics were being taught. The time-in-tier 1 to time-in-tier 2 ratio (T1/T2) was compared to assess the extent of time allocated for each. Descriptive statistics were used to analyze the data and recommendations were made to the curriculum committee to optimize the curriculum. The project received exemption from the University’s institutional review board. **Results:** Among the 94 tier 1 topics, 100% were covered in GSOP’s curriculum whereas only 65% (87/133) of tier 2 topics were being formally taught. Tier 2 topics with significant pharmacotherapy not being covered included sickle cell anemia, pulmonary arterial hypertension and multiple sclerosis. Among the 22 organ system categories listed in the toolkit, 95% had higher T1/T2 ratio in the curriculum. Although very few tier 3 topics were being taught, recommendations were made to reallocate time to tier 2 topics. Suggestions were also given to offer students the opportunity to learn some tier 2 topics through problem-based learning and student-led presentation courses. **Conclusions:** Tier 1 topics were appropriately prioritized throughout GSOP’s didactic curriculum. However, there is an opportunity to creatively integrate additional tier 2 topics in the curriculum. We recommend using the ACCP toolkit to enhance curricular efficiency across schools and colleges of pharmacy.

**Utilizing Flipgrid as a Platform to Facilitate a Group Project in a Socially Distanced Environment**

Rashi C. Waghel, Wingate University; Jennifer A. Wilson, Wingate University, Melissa M. Dinkins, Wingate University. **Objective:** To evaluate the perceived impact of using Flipgrid to create an online group learning space for students in a socially distanced environment as necessitated by the COVID-19 pandemic. **Methods:** Student groups in a pharmacotherapy course were assigned a self-care scenario, and students independently traveled to local pharmacies to identify a nonprescription product related to their scenario. Students individually recorded a review of the product using Flipgrid. Subsequently, students reviewed and replied to group member videos to compare products in Flipgrid. As a group, students then developed consensus regarding the most appropriate product recommendation for their scenario. At course conclusion, students completed a questionnaire regarding perceptions of using the Flipgrid platform for the project. Descriptive statistics were utilized. **Results:** Seventy-five students participated in the group project and 91% completed the perceptions questionnaire at semester end. Only 4% of students indicating using Flipgrid previously. Many students found the Flipgrid platform enjoyable (68%) and easy to use (74%). Most students (82%) viewed all of their group members’ Flipgrid videos, and the majority (88%) agreed or strongly agreed the Flipgrid platform worked well for facilitating group project discussion in a socially distanced environment. **Conclusions:** Although most students had no previous experience with Flipgrid, the platform was perceived as enjoyable and easy to use. Overall, students agreed the platform is an effective way to facilitate a group project, as they had access to all group member recordings. Though utilization of Flipgrid in this way was initially due to pandemic restrictions, the positive student response shows promise for continued use of the platform. The Flipgrid platform provides a unique option for completion of group projects in multiple environments, including socially distanced and asynchronous.

**Validity Evidence for Educational Testing in Recent Pharmacy Education Literature**

Kamila A. Dell, University of South Florida; Gwendolyn A. Wantuch, University of South Florida; Neal...
Conclusions: Reporting validity evidence was lacking from most pharmacy education articles, and significantly declined since 2013. Validity evidence is vital to sound decision-making from scores of student learning assessments. Further education and/or processes seem needed for investigators, journal reviewers, and journal editors to ensure validity evidence is reported when inferences, including statistical testing, are being made from learning assessment scores.

Social and Administrative Sciences

“How” and “Why” Does a Student Pharmacist Leadership Development Program Work?  
Robert A. Bechtol, Cedarville University School of Pharmacy, Kristin Janke, University of Minnesota, John LaVelle, University of Minnesota College of Education and Human Development, Twin Cities, Jon Schommer, University of Minnesota College of Pharmacy, Twin Cities, Timothy P. Stratton, University of Minnesota College of Pharmacy, Duluth. Objective: To use the evaluation sciences to identify key variables related to “how” and “why” the University of Minnesota College of Pharmacy leadership program works/functions, based on stakeholder perspectives. Methods: An intrinsic, single case study research design was used with a participatory evaluation approach. Current pharmacy students, leadership program alumni, and leadership program directors participated in dyadic and one-on-one interviews and focus groups.Artifact reviews were also conducted. Data was managed using NVivo 12.0. Analysis included first cycle in-vivo and process coding and second cycle pattern coding prior to theme development. Results: Sixteen themes describe “how” the leadership program works/functions (three major and thirteen supporting themes). Examples of “how” the program works includes providing opportunities for real world application throughout the program and starting leadership concepts early in the curriculum that are low risk to allow students to build confidence and gain richer experiences as the program progresses. Fifteen themes describe “why” the leadership program works/functions (four major and eleven supporting themes). Examples of “why” the program works includes students are able to discover their passions, develop a sense of self as a leader, think outside their comfort zone, build confidence to face uncomfortable situations, and see challenges as opportunities for growth. Conclusions: Learning about the “how and why” a program works/functions allows educators to identify important elements of the program, their inter-relationships, and their cumulative effects. Asking “How does the program work?” informs educators about elements to consider when designing and structuring leadership development programs. The question “Why does the program work?” informs educators on the elements they may want to strive for or goals they want to achieve when creating leadership development programs.

A Hidden Curriculum in Pharmacy Education: Analysis of Diversity Representation Within Case-Based Learning Materials  
Kyle Wilby, Dalhousie University, Dianne Cox, Dalhousie University, Anne Marie Whelan, Dalhousie University, Vibhuti A. Amirfar Arya, St. John’s University, Heidi Framp, Dalhousie University, Susan Mansour, Dalhousie University. Objective: There are calls to dismantle systemic racism and discrimination in pharmacy education. Previous studies, as well as premises from race and queer theories, suggest that written cases that do not appropriately include patient diversity may promote a ‘hidden curriculum’ that fails to recognize the needs of the underserved. This study aimed to determine how diversity is represented within case-based learning materials across
a program of study. Objectives were to determine the extent that underrepresented populations were represented in case descriptions and to identify how representation occurred within and across underrepresented groups. It was hypothesized that representation would occur to a minimal extent. **Methods:** This was a qualitative content analysis of written patient cases (n = 76) used throughout the problem-based learning curriculum at the College of Pharmacy, Dalhousie University. Proportions were calculated for each variable identified to represent the categories of interest (race, gender, sexual orientation, relationship status, and presence of disabilities). Quantified data were analyzed and themes were identified to represent each category assessed. **Results:** Data across all categories was mostly ‘undefined’. The most defined variables within each category were: white (race, 17.1%), female (gender, 53.9%), heterosexual (sexual orientation, 35.2%), married (relationship status, 29.6%) and wheelchair (disability, 13%). Defined variables were representative of dominant cultural groups with little representation of underrepresented populations. Themes identified were undifferentiated (race), binary (gender), heteronormative (sexual orientation), traditional (relationship status), and absent (disabilities). **Conclusions:** Findings support the notion that there may be a ‘hidden curriculum’ reinforcing biases and stereotypes due to the undefined nature of the cases. Educators should prioritize inclusion of diversity within cases as part of a coordinated plan, in order to ensure representation is appropriate and well-distributed across the curriculum.

**A Multifaceted Approach to Overcoming COVID-19 Vaccine Hesitancy in a Medically Underserved Area**

Yen H. Dang, University of Maryland Eastern Shore, Adel Karara, University of Maryland eastern Shore, Ajan Nan, University of Maryland eastern Shore, Lana Sherr, University of Maryland Eastern Shore. **Objective:** To develop and implement a pharmacy-led curriculum comprised of WHO SAGE Vaccine Hesitancy Matrix evidence-based practices on overcoming SARS-CoV-2 vaccine hesitancy among high school students. **Methods:** A SARS-CoV-2 vaccination hesitancy program led by healthcare providers, public health workers, teachers, and religious leaders was implemented among high school students based on principles from the WHO SAGE Vaccine Hesitancy Matrix. Afterwards, the students helped design two student-hosted SARS-CoV-2 vaccination videos on social media and volunteered at a vaccination clinic to address remaining vaccine-related misconceptions in the community. Entry and exit surveys were evaluated on a 5-point Likert scale. The McNemar test was used with an alpha level of 0.05. **Results:** Forty-five high school students participated in the 4-month pharmacy-led program on SARS-CoV-2 vaccine hesitancy. After participating in the Vaccine Hesitancy Program, significantly more students agreed that “I have adequate knowledge about SARS-CoV-2 disease”; P = 0.041. Additionally, significantly more students that “I have adequate knowledge about the SARS-CoV-2 vaccine”; P = p.009. Finally, 20 students (51%) strongly agreed and agreed that “I am comfortable serving as a SARS-CoV-2 vaccine ambassador where I can promote the SARS-CoV-2 vaccine to my community.” **Conclusions:** This program is innovative by combining the expertise of pharmacists, the main providers of SARS-COV-2 vaccines with specific knowledge of issues related to vaccine hesitancy, with influential community leaders to educate and empower students from a medically underserved population. Ultimately, the impact of this innovative program allowed for students to become vaccine champions and serve as ambassadors for SARS-CoV-2 vaccines to empower their teachers, family, and community to get vaccinated through novel educational resources including working at a COVID-19 vaccine clinic, creation of videos, and social media outreach.

**A Novel Approach to Introduce P1 Students to Forensic Pharmacy**

Fawzi A. Elbarbry, Pacific University Oregon, Huy T. Hoang, Pacific University Oregon, Anita J. Cleven, Pacific University Oregon. **Objective:** Forensic pharmacists play an important role relating to litigation, the regulatory process or the criminal justice system. It is imperative as educators to highlight different pharmacy practice areas. We are proposing a curricular activity which will teach forensic pharmacy, critical thinking, and presentation skills by having student groups analyze episodes of Forensic Files (a television show that reveals how forensic science is used to solve violent crimes, mysterious accidents, and outbreaks of illness) that are pharmaceutically relevant and presenting critical evaluations of the content within. **Methods:** Teams were randomly created comprised of 6-7 students. Each team was assigned a 30-min Forensic File episode to watch and review. Teams were instructed to prepare a 3-page report that contained the following components: medication incident, effects to patients, contributing factors, safety measure(s) that could help decrease the likelihood of the incident, role that a Forensic Pharmacist would play, mechanism of action,
major toxicities, indication(s) for the assigned drug or compound that was presented in the “Forensic File” case, explanation of how the chemical structure and/or pharmacokinetics/pharmacodynamics of the medication has contributed to the harm to the victim in the case, and one “Key Take-Away Point”. Results: Approximately 70% of students agreed that the activity demonstrated the following: harmful impacts related to inappropriate medication use, increased interest in the mechanism of action of drugs, strengthened knowledge of Pharmaceutical Sciences, enhanced critical thinking skills, and effectively communicate as a team. Textual comments by students demonstrated their increased interest in the forensic pharmacy as a career. Conclusions: This was a unique and feasible online activity to implement which increased P1 student awareness regarding forensic pharmacy.

A Systematic Review of Factors Associated with HPV Vaccine Acceptability Among College Students Using HBM

Fahad T. Alsulami, College of Pharmacy at Nova Southeastern University, Jesús Sánchez, College of Pharmacy at Nova Southeastern University, Silvia Rabionet, College of Pharmacy at Nova Southeastern University, Ioana Popovici, College of Pharmacy at Nova Southeastern University, Mohamed Baraka, College of Pharmacy at Al Ain University. Objective: To present a systematic review of peer-reviewed research on the factors associated with the Human papillomavirus (HPV) vaccine acceptability among college students by using the health belief model (HBM) as a theoretical framework. Acceptability refers to the willingness of college students to receive the HPV vaccine. This study contributes a systematic review of the available literature that may contribute to the development of effective interventions to increase HPV vaccination among college students. Methods: An extensive search across electronic databases was conducted by using the search terms “Human papillomavirus” “Human Papillomavirus vaccine” “College students” “Students” “Health belief model” “Perceived susceptibility” “Perceived severity” “Perceived benefits” “Perceived barriers” and “Cues to action” in different combinations. Results: 1,920 articles were identified. A total of 19 articles were included in this systematic review as they met the inclusion criteria. Sixteen, thirteen, and nine studies reported a significant association between the willingness to receive the HPV vaccine among college students and perceived benefits of receiving the HPV vaccine, perceived susceptibility of getting HPV, and perceived barriers for receiving the HPV vaccine, respectively. Perceived benefits of receiving the HPV vaccine was the relevant factor associated with the HPV acceptance rate among college students, followed by perceived susceptibility to HPV and perceived barriers to receive the HPV vaccine. However, perceived severity of HPV had the lowest effect on the willingness of students to receive the HPV vaccine; only five studies reported a significant association between them. Conclusions: Vaccination campaigns must address these factors to increase the HPV vaccination rate among college students. However, further research is needed to develop evidence-based strategies.

An Artificial Intelligence Approach to Assessment of Student Success: From Concept to Implementation

Maryann Wu, University of Southern California, Mrunmayee Shirodkar, University of Southern California, Ying Wang, University of Southern California, Tiffany Doan, University of Southern California, Yuhui Li, University of Southern California, Ian S. Haworth, University of Southern California. Objective: Artificial intelligence (AI) has great potential to assess the impact of educational activities on student outcomes. At the University of Southern California, an AI model has been built and referred to as AI-SiPS (Success in Pharmacy School). Methods: Conceptually, we wanted to develop a model to predict student success upon graduation, using stepwise assessment of activities through the program. The current three-stage model includes data collected during semesters 1 (P1), 2-4 (P1-P2), and 5-6 (P3). Results: The AI model was built on KNIME ver.4.5.1, using the Decision Tree algorithm. As an example, we focused on a model describing success in obtaining a residency using curricular information (order of clinical rotations), student motivation (goals identified in a P3 survey), and student confidence level (P3). Data were evaluated for 382 students who graduated in 2019-2021. Of students with a clear residency goal (n=81), 72% obtained a residency. For those still uncertain in P3 (n=336), 143 attempted to obtain a residency, and success rate was higher if they had a certain order of clinical rotations (71% vs. 63%). Conclusions: Preliminary results indicate a need to better identify students with a clear residency goal and ensure that these students are given certain orders of clinical rotations. Similar considerations are needed for students with other career goals. Earlier stages of the model can be used to predict this information. Use of earlier data to predict key parameters for later stages, and identification of points of intervention, can be used to “disrupt” the model in future years. The development of AI-SiPS has provided insights into our assessment processes and suggested changes to collect appropriate and timely data to feed the model.
Be Well: Qualitative Evaluation of Factors Influencing Student Pharmacists’ Wellbeing

Jackie M. Zeeman, University of North Carolina at Chapel Hill, Akina Nana, UNC Eshelman School of Pharmacy, Emily Pickering, UNC Eshelman School of Pharmacy, Suzanne C. Harris, University of North Carolina at Chapel Hill. **Objective:** Literature identifies concerning rates of burnout and decreased wellbeing across the health professions, including student pharmacists. While prior studies have quantified the degree of burnout and wellbeing in various populations, more information is needed to understand factors influencing these constructs to guide support resources. The purpose of this study was to identify factors contributing towards student pharmacist burnout, and solicit recommendations from participants on strategies to promote and support student pharmacist wellbeing. **Methods:** First year (PY1), second year (PY2) and third year (PY3) doctor of pharmacy (PharmD) students enrolled in the didactic curriculum participated in a 60-minute Zoom focus group in Fall 2021. Focus groups were organized by cohort to explore the experiences that may be unique to those groups. A semi-structured focus group or interview was used to explore factors influencing burnout and wellbeing. Participants were prompted to provide recommendations for strategies to promote and support wellbeing. **Results:** Twelve PharmD students participated in a total of six semi-structured focus groups/ interviews: eight PY3s in three focus groups (n=2-3 students/group), three PY2s in one focus group (n=2 students) and one interview (n=1 student), and one PY1 student in one interview. Students identified factors contributing towards burnout, including academic workload, competition among peers, culture, and lack of discretionary time. Students indicated community/friendships, activities aligned with their career goals, and positive interactions with faculty as factors that brought fulfillment. Students identified curricular, co-curricular, and culture recommendations to promote student wellbeing. **Conclusions:** Supporting student wellbeing is an important initiative with pharmacy education and health professions education more broadly. This study explored factors that influence student burnout and wellbeing. Findings can be used to inform resources and student support across the academy.

Changes in Student Cognitive Domain Performance Over Six Semesters of a Didactic Curriculum

Melissa M. Dinkins, Wingate University, John B. Harris, Wingate University. **Objective:** To evaluate changes in student cognitive performance over time stratified by knowledge, application, and problem-solving cognitive domains expecting performance improvement over time. **Methods:** Assessment data housed in ExamSoft was analyzed for all students graduating in the classes of 2020 and 2021. The data represented performance on the majority of summative assessments in semesters one through six for each cohort, including comprehensive annual assessments. The data were sorted by cognitive domain for each semester and analyzed using the Kruskal-Wallis test after evaluating normality with the Shapiro-Wilk test. Differences between semesters were assessed using the Dwass, Steel, Critchlow-Fligner (DSCF) method for each stratum. Campus specific analysis was also conducted. **Results:** School semester knowledge and application performance differed over 6 semesters (p<.001). No difference in problem-solving performance was realized (p=.36). Knowledge performance varied at both the main (n=189) and distance (n=39) campuses (p<.001 and p=.03, respectively). Application performance differed between semesters at the main campus (p<.001). Semester to semester analysis for each cognitive domain stratum resulted in high knowledge domain performance in semesters 1 and 5 and low performance in semesters 2 and 6. Semester 2 was also the lowest application performance semester. The main campus semester to semester performance mirrored the overall school performance. The distance campus, however, did not experience semester to semester differences in cognitive domain performance after the DSCF analysis. **Conclusions:** Application performance improved over time as expected; however knowledge performance varied and problem-solving performance was static between semesters one and six. Curriculum and assessment efforts to improve knowledge and problem-solving performance will be implemented to support student growth over time.

Clinical Reasoning, Experts, and Students: Validating a Script Concordance Test Using Rasch Analysis

Jill M. Augustine, Mercer University, Lydia C. Newsom, Mercer University, Kathryn Momary, Mercer University. **Objective:** To assess the scores of a Script Concordance Test (SCT), a clinical reasoning assessment tool, between third-year pharmacy students (P3), final year pharmacy students (P4), and practicing pharmacists (expert panel). **Methods:** The SCT consisted of 20 vignettes, each with 3 associated questions (n = 60) each with a 5-point response scale. Both P3s and P4s took an electronic version of the SCT during the final weeks of the spring semester. The expert panel also took the test electronically and were recruited from a national pool of pharmacists providing patient care as a part of their primary job responsibilities.
Responses to the SCT were assessed as either “correct” or “incorrect” based on the judgement of the SCT writers. Rasch analysis was used to validate the instrument and determine group differences in item responses. **Results:** A total of 330 people completed the SCT, 146 P3 students (44%), 134 P4 students (41%), and 49 experts (15%). The reliability of this SCT was 0.71. The instrument was found to be easier than the overall group ability (instrument mean of 0.0 logits compared to respondent means of 0.82 logits). There was no significant difference in overall SCT performance between the three groups. No significant gaps in item difficulty were identified. When examining individual questions to determine performance differences, at least two groups performed significantly differently on 28 questions (46.7%): 14 questions when comparing experts and P3 responses, 14 questions with experts and P4 responses, and 19 questions with P3 and P4 responses. **Conclusions:** The SCT demonstrated good reliability and content validity. Additional investigation should identify factors that impact individual and group performance based on question content and difficulty level.

**Evaluation of Method to Track Activities and Domains Used for Required Co-Curricular and Interprofessional Reflections**

Staci Hemmer, University of Montana, Kailyn Cleveland, University of Montana, Sherrill J. Brown, University of Montana, Jean T. Carter, University of Montana. **Objective:** Evaluate current method for categorizing Co-curricular and Interprofessional Education (IPE) activities and related skills for Standards 1 through 4 domains in required reflections. **Methods:** Data from 1,245 entries were analyzed to determine how well students selected from three event categories (Co-curricular, IPE, Both); five activity categories (School Service, Professional Service, Community Event, Student-organized Activity, or Interprofessional Event), and 42 activity subcategories as well as which domains were most frequently cited. Two authors rated each entry for correct designations; disagreements were settled through consensus. Results were summarized with descriptive statistics. Domain selections were counted but not rated or tied to specific activities. **Results:** Prior to the COVID-19 pandemic, events were Co-curricular (49%), IPE (42%) or Both (9%). In AY20-21, Co-curricular was 34% and IPE was 61%. Event types were mis-identified in 20% of entries with 62% of those errors due to not selecting “Both.” Activity categories most frequently selected were Interprofessional Event (36%) and School Service (30%) with 75% and 30% deemed appropriately categorized, respectively. For activity subcategories, both “School Service-Participating in a Committee” and “School Service-Other” each had over 90% of their entries incorrectly categorized. Domains most frequently selected were Professionalism (65%), Interprofessional Collaboration (51%), and Health and Wellness (40%); least often were Cultural Sensitivity (16%), Entrepreneurship (16%), and Patient Advocacy (15%). **Conclusions:** Results indicate wide-spread confusion about the correct categories for types of events, activity categories, and subcategories used in required reflection reporting. Potential contributing factors included the large number of subcategories and use of categories that were not mutually exclusive. Further study is needed to guide category revisions and explore how specific activities support development of certain domain skills.

**Exploring Job Satisfaction among Pharmacists in the Arab World: A Qualitative Study**

Ali Azeez Al-Jumaili, The University of Baghdad College of Pharmacy, Rehab A. Elhiny, Minia University, Dixon Thomas, Gulf Medical University, Fawzi A. Elbarbry, Pacific University Oregon, Fatima Sherbeny, Florida A&M University, Anas Hamad, Qatar University, Fadi A. Alkhateeb, South College School of Pharmacy. **Objective:** In the absence of in-depth (qualitative) information on the level of pharmacists’ job satisfaction in the Arab world, the results of the present study will allow policymakers to take corrective steps based on the information gathered. Thus, this study objective was to explore in-depth the pharmacists’ satisfaction level and the challenges they encounter in their career path in the Arab world. **Methods:** This qualitative study was part of a large quantitative study. Data were collected using a self-administered electronic questionnaire posted on pharmacists’ social media (Facebook/Twitter/LinkedIn/WhatsApp) networks in 18 Arab countries. The electronic survey was administered through Qualtrics Survey Software (Qualtrics, Inc, Provo, UT). The survey link was open from March 22, 2021 to May 1, 2021. **Results:** Pharmacists were free to add any additional comments about job satisfaction and job dissatisfaction at an optional open-ended question. Dissatisfaction with underestimation of the pharmacists’ role and low salaries were the major themes. Lack of motivation and excessive workload, especially in the hospital sector, were reported as contributors to job dissatisfaction. In addition, some participants declared that COVID-19 affected their job satisfaction. However, professional commitment and the area of the work setting are the major contributors to job satisfaction. **Conclusions:** Government officials and pharmacy profession stakeholders in the Arab countries should consider the outcomes of this study to address the underlying causes of job dissatisfaction among Arab pharmacists.
pharmacists. While the results of our study reveal the need to improve the work environment for pharmacists, the authors also recommend careful attention to pharmacy education to better prepare pharmacy graduates for the global dynamic changes in the pharmacy practice.

Faculty Perspectives on Cultural Competency training in the PharmD Curriculum

Gladys Ekong, Western New England University, Elizabeth Unni, Touro College of Pharmacy-New York, Akeshia Edwards, University of Findlay, Margarita Echeverri, Xavier University of Louisiana. Objective: To assess the perspectives of faculty members on Cultural Competency (CC) training in the PharmD curriculum across pharmacy schools in the US and Canada. Methods: A cross-sectional survey using the validated measure “Self-assessment of Perceived Level of Cultural Competence (SAPLCC)” among pharmacy faculty teaching CC. The survey examined the extent of CC knowledge and skills taught, and the confidence in teaching CC, using a 4-point scale (1 = “Not at all” to 4 = “To a great extent”). Domain summary scores were calculated. Data were analyzed using descriptive statistics. Results: Of the 85 completed responses, 77.1% were female, 67.1% white, and 88% had received CC training. Average age was 47.97 (±10.52) and years teaching CC was 5.23 (±1.36). CC course was often integrated into other courses (95.2%) and 65% reported not assessing the student’s level of CC. “Sociocultural issues” (5 items) had the highest summary score on CC extent taught 2.7 (±0.75) and confidence in teaching 2.9 (±0.8). “Policies and legal issues related to CC” (2 items) had the lowest score on extent taught 1.92 (±1.03), and confidence in teaching 2.03 (±1.06). “Population health” (6 items) also had a low score of 2.00 (±0.83) on the extent taught and 2.20 (±0.83) on confidence in teaching. 66.67% reported teaching CC skills on eliciting patient’s perspectives about health and illness” and 68.33% taught “assessing health literacy” skills “to a great or moderate extent”. The skills least taught were “use of folk healers” (31.66%) and “dealing with cross-cultural conflicts related to informed consent” (30%). Conclusions: Findings may support CC training recommendations in some domains, to improve CC content in the PharmD curriculum and prepare students for an increasingly culturally diverse patient population.

Fourth-Year Student Pharmacists’ Perspectives of In-Person versus Virtual Pharmacy Research Poster Sessions

David R. Axon, The University of Arizona, Soluna Whaley, University of Arizona. Objective: The research poster project is considered an essential component of many health care curriculums. However, little research has been done to explore the acceptability of in-person versus virtual research posters among student pharmacists. This study aimed to assess the preferences of fourth-year student pharmacists with prior research training for an in-person versus virtual pharmacy research poster session. Methods: An electronic survey was administered to all fourth-year student pharmacists enrolled in the University of Arizona College of Pharmacy research course in Fall 2021 (N = 132). Six items explored students’ opinions towards research posters using a five-point agreement scale. Twelve items explored students’ preferences for either research poster format. Lastly, students indicated their overall preference for an in-person or virtual research poster session. Data were analyzed descriptively. Results: A total of 63 fourth-year student pharmacists completed the questionnaire. The median agreement score was four out of five, indicating favorable attitudes towards the importance of research posters in pharmacy curriculum. A majority of students said they would enjoy research posters more, and would be more able to present at, participate in and ensure that all can participate in poster sessions if the poster sessions were virtual as opposed to in-person. Overall, a majority (76.2%) of students indicated a preference for virtual over in-person research poster sessions. Conclusions: The study results suggest that student pharmacists prefer virtual rather than in-person poster sessions. Further research is recommended to explore the comparative effectiveness of these poster formats to achieve learning outcomes in varying university pharmacy programs.

Health Students’ Perceptions on Motivation and Group Work in Emergent Remote Learning

Easton K. Bracey, USF Taneja College of Pharmacy, Farwa Syed, USF Taneja College of Pharmacy, Ana-María Diaz, USF Taneja College of Pharmacy, Rosalyn Gonzalez-Rodriguez, USF Taneja College of Pharmacy, Thi Nguyen, USF Taneja College of Pharmacy, Gwendolyn A. Wantuch, University of South Florida, Kamila A. Dell, University of South Florida. Objective: Describe the perceptions of health professional students on the motivation of learning and group work in remote instruction during the COVID-19 pandemic. Methods: A voluntary, anonymous online Qualtrics survey was distributed to University of South Florida Health students in the Fall of 2021. Responses from students who switched to remote learning in Spring 2020 and continued through Fall 2021 were included in the analysis. Cognitive interviews were performed to validate the survey. Descriptive statistics were utilized to analyze quantitative data and thematic
analysis for qualitative data. The study was approved by the Institutional Review Board. **Results:** A total of 213 student responses were included in the analysis (86 Public Health, 27 Medicine, 64 Pharmacy, and 36 Nursing). Even though 89% of students reported motivation for increasing skills and knowledge, the majority felt disconnected from professors (51%) and fellow students (54%) during remote learning. This was similar across colleges. Overall, students set goals to help manage time for online courses (75%). This was more prevalent for Nursing (89%) and Public Health (81%) than for Medicine (67%) and Pharmacy (63%). Attention in class was lower for Pharmacy (39%) versus all colleges (58%). Attention decreased when teachers talk (42%). Students agreed that completing assignments as a group was more difficult than working alone while online (62%) and most students preferred to work alone (66%). **Conclusions:** Emergent remote instruction can impact student learning experiences. Students reported a high level of motivation for learning, but noted feelings of disconnectedness and difficulty in performing group work. Efforts to assist students in engagement with faculty and peers, or dedicated time for groupwork, may assist these challenges in the future.

**I Want You to Stay: The Role of Professional Identity in Student Retention**

Benjamin D. Aronson, *Ohio Northern University*, Michelle R. Musser, *Ohio Northern University*, Jessica Hinson, *Ohio Northern University*, Emily Eddy, *Ohio Northern University*, Kristin Janke, *University of Minnesota*. **Objective:** To explore the relationship between professional engagement, a surrogate marker for professional identity, and retention. We hypothesized that students with low engagement levels will be more likely to leave the program. **Methods:** This was a retrospective analysis of three student cohorts at a 0-6 direct-entry program. Students completed the Student Pharmacist Inventory of Professional Engagement (S-PIPE) during their first semester. Exit interview data from students who left the program prior to their 6th semester, and administrative data including age, gender, race/ethnicity, home location, country of citizenship, high school grade point average (GPA), and current GPA, were also collected. Descriptive, bivariate, and multivariable models were computed. **Results:** Three hundred and nineteen students enrolling in 2019, 2020, and 2021 provided responses to the S-PIPE during their first semester. Retention in the program through a possible 5 semesters was positively correlated with the belonging subscale of the S-PIPE (r = .133, p = .018), as were several individual items; both the meaningful experience and connectedness subscale were not related to retention. Among those who left the program, higher belonging scores were associated with the number of semesters completed before leaving (r = .305, p = .030). Dichotomized professional engagement (high vs. low), on its own, was not related to retention. Multivariable models that included demographic factors, reason for leaving, GPA, and professional engagement had improved explanatory capability. **Conclusions:** Not only is belonging linked to retention, but also to program longevity in those who eventually leave. While professional engagement is associated with retention, reasons for leaving are complex and include other personal and academic issues. Optimizing identity formation, with an emphasis on belonging, is one plausible method of retaining some students.

**Identifying Workplace Factors that Influence Pharmacy Faculty Well-Being**

Suzanne C. Harris, *University of North Carolina at Chapel Hill*, Jackie M. Zeeman, *University of North Carolina at Chapel Hill*, Akina Nana, *UNC Eshelman School of Pharmacy*, Emily Pickering, *UNC Eshelman School of Pharmacy*. **Objective:** Several studies have quantified the degree of burnout in clinicians and pharmacists, though there are limited studies evaluating factors influencing burnout and well-being in pharmacy faculty. The purpose of this study was to explore perspectives of factors influencing faculty well-being at the UNC Eshelman School of Pharmacy and solicit recommendations on strategies to improve faculty well-being. **Methods:** Semi-structured focus groups were used to illicit experiences related to well-being in faculty participants. Responses from faculty who consented to participate during the study period from October 2021 to November 2021 were included for analysis. Qualitative thematic analysis was performed on zoom transcripts. Inductive coding was used to create the study codebook. Two researchers independently coded each transcript using the developed codebook. Discrepancies in codes were discussed until consensus was achieved. **Results:** Eleven faculty participated in four focus groups: six assistant professors in two focus groups, three associate professors in one focus group, and two full professors in one focus group. Faculty identified workplace factors that contribute towards burnout, including overwhelming workload, unclear expectations, and pressure to maintain school ranking. Full professors expressed concerns about junior faculty retention and burnout, including promotion pressures. Factors identified that bring fulfillment included finding joy in their work, comradery among coworkers, and interacting with learners. Faculty recommendations included efforts from leadership to create culture change, transparent
communication, and protected time without interruptions. 

**Conclusions:** This study explored workplace factors that influence burnout as well as bring joy and fulfillment. Findings on workplace factors associated with faculty burnout and faculty fulfillment can inform employers of areas to focus strategies to improve faculty well-being.

### Impact of an Inquiry Based Stress Reduction Intervention on Pharmacy Students Test Anxiety

Martha Ndungu, University of the Pacific, Suzanne M. Galal, University of the Pacific, Matisa Peng, University of the Pacific, Emily Tran, University of the Pacific, Jeffrey Chang, University of the Pacific, Deepti Vyas, University of the Pacific. **Objective:** To assess anxiety amongst pharmacy students and the impact of an Inquiry Based Stress Reduction (IBSR) technique. **Methods:** Students enrolled in the Integrated Sciences Endocrine Disorders course were eligible to participate in the study. The study used a pre/post-test study design where participants completed the State Trait Anxiety Inventory (STAI) and a survey including attitude and perception questions. Participants were randomized in either the IBSR intervention or control group. All participants attended a 1.5-hour seminar; the intervention group learned how to use the IBSR technique, and the control group learned about an unrelated subject. Following the seminar, the intervention group submitted 3 weekly self-reflections using the IBSR technique as it related to anxiety towards upcoming exams. All participants completed the “State”, short form of the STAI, to assess anxiety at the start of two major exams. **Results:** A total of 86 students completed the study. The average score on the STAI for all participants was 51 out of 80 points indicating moderate-severe anxiety. There was no significant difference between the intervention and control groups “State” anxiety scores prior to exam 2 (p=0.99) and exam 3 (p=0.60). However, 67% of participants in the intervention group reported the technique helpful, 58% changed their approach to test taking and 61% changed the way they thought about themselves in general. **Conclusions:** There is a high prevalence of anxiety amongst the pharmacy student population. While the IBSR intervention did not have a significant impact on anxiety prior to exams, results showed that students thought the technique to be helpful overall. Future studies should explore other interventions to manage anxiety.

### Impact of COVID-19 on Prescription and Recreational Drug Misuse: A Demographic Analysis of 88,000 Respondents

Ashim Malhotra, California Northstate University, Jose Puglisi, California Northstate University College of Medicine. **Objective:** The opioid epidemic is at a crisis point in the U.S. with 279,065 overdose-related deaths in 2017, expected to be exacerbated by the COVID-19 pandemic. Our goal was to determine the impact of COVID-19 prescription and illicit drug use in the U.S. **Methods:** We analyzed responses from 56,276 (pre-COVID, 2017) and 32,000 (during COVID, 2020) individuals from U.S. Substance Abuse & Mental Health Data Archive and National Survey on Drug Use and Health. We analyzed the effect of race, age, family income, and education on drug consumption pre-and-during COVID. We used the Fisher test and IBM SPSS statistics version 25 to analyze the data and create a logistic equation. **Results:** Our analysis demonstrated that within the population that answered the survey, prescription opioids misuse declined significantly during COVID while street drugs consumption remained the same. Hydrocodone and Ecstasy were the most abused prescription and illegal drugs, respectively. Interestingly, hydrocodone misuse fell from 2.64% (95% CI [1.8, 2.0]) in 2017 to 1.11% (95% CI [1.0, 1.2]) (p<0.01), while ecstasy consumption remained the same (1.3%). Furthermore, the pattern of hydrocodone abuse pre-and-during COVID remained the same with White > Hispanic > African Americans > Asians, though abuse significantly declined during the pandemic (p<0.001). Hydrocodone consumption declined significantly among all age groups, except for those above 65 years, where it paradoxically increased. **Conclusions:** Our study revealed that hydrocodone remained the most abused prescription drug before and during COVID-19. Importantly, there was a significant decrease in prescriptions opioids misuse across races and age groups except those over 65, suggesting that measures regarding the opioid epidemic are beginning to yield impact, while no changes occurred in the consumption of street drugs.

### Impact of Faculty Roles on Perceived Stress

Omar F. Attarabeen, Marshall University, Fadi A. Alkhateeb, South College School of Pharmacy, Nile Khanfar, Nova Southeastern University. **Objective:** High perceived stress may result in several physical and mental health problems. This study aimed to assess how role distribution (i.e., teaching, research, service … etc.) impacts pharmacy faculty perceived stress in the US. **Methods:** Following an IRB approval, over 5,000 pharmacy faculty in the US were invited to participate in a Qualtrics based, quantitative survey. The outcome variable was assessed using the 10-item Perceived Stress Scale. The independent variables were measured by asking participants to estimate the proportion of their time spent on teaching, research, service, administration, and other responsibilities (e.g., practice,
faculty development ... etc.). After the initial invitation, 2 reminders were sent approximately one month apart. The collected data were analyzed using SPSS program. Linear regression analyses were conducted after controlling for demographics factors. **Results:** Analyzable data were collected from 774 participants (response rate = 15%). On average, participants spent approximately 39.5% of their time on teaching, 19.5% on research, 19.2% on service, 16.5% on administration, and 5.2% on other responsibilities. The regression analyses revealed that spending more time on teaching was associated with more perceived stress (p=0.002). However, spending more time on administration was associated with less perceived stress (p< 0.001). Proportion of time spent on research (p=0.575), service (p=0.051) and other responsibilities (p=0.612) did not significantly impact perceived stress. **Conclusions:** Due to longer experience, administrators may have better stress-management skills. Faculty with more teaching responsibilities may require more attention in order to prevent potential consequences of stress such as exhaustion and deterioration of health.

**Impact of the COVID Induced Remote Learning Environment on Student Performance in a Pharmacy Program**

Patti Black, South University, Lilia Z. Macias-Moriarity, South University, Christopher Adkins, South University, Ajay Singh, South University; Adegoke O. Adeniji, South University. **Objective:** To evaluate the performance of students during the remote learning environment, occasioned by the COVID19 pandemic, in an accelerated Pharmacy program in the US and assess student perceptions of and reaction to the remote learning experience. **Methods:** The mean GPA of the student cohort in the fully remote learning environment was compared to that of previous fully in-person cohorts at the same stage in the didactic curriculum. A similar analysis was conducted between students in the same cohort who opted for the remote instruction and those who chose in-person instruction modality. Subsequently, student pharmacists were invited to complete an online survey to collect perspectives on rapid conversion from on-ground in-person courses to remote instruction. Summative scores were calculated within factors to determine if differences exist between student pharmacists who preferred fully remote versus fully in-person learning. The data was analyzed using either the Wilcoxon rank sum test or the Mann-Whitney U test. **Results:** Student GPA outcomes during the COVID-induced, fully remote learning environment were significantly higher than those from historic fully in-person learning environments (p=0.00002). No difference in GPA outcomes was observed (p=0.123) during hybrid instruction when students could choose to continue remote learning or return for in-person learning. Perceived student adaptations (p=0.0001), and faculty adaptations (p=0.004) were different between students who preferred fully remote learning versus fully in-person. **Conclusions:** The remote learning environment did not have a significant negative effect on student performance in our accelerated Pharmacy program. Students identified adaptive changes they made and those by faculty as factors that influence their preference for the remote learning environment. The impact of these factors on student outcomes will require further exploration.

**Impact of Using the ADVANCE Platform on Student Professional Identity Formation**

Craig A. Kimble, Marshall University School of Pharmacy, Omar F. Attarabean, Marshall University, Lisa Nord, Marshall University, Christopher Booth, Marshall University, Eric Blough, Mar. **Objective:** Promoting a unique professional identity among students is an educational goal for pharmacy schools. This study aimed to describe the school’s experience utilizing the ADVANCE continuous professional development planner and workforce development tool by the American Pharmacists Association. We also assessed the impact on students’ professional identity and motivation for the profession. **Methods:** Following an IRB approval, first-year students were invited to participate in a 26-item survey. It was completed prior to and again after utilizing the ADVANCE tool in a pre and post design. Professional identity was measured by the 9-item Macleod Clark Professional Identity Scale (MCPIS-9). Motivation to pursue the profession of pharmacy was measured by 14-item Pharm-S scale. Both scales utilized a 5-point Likert scale and were adapted to the pharmacy profession by previous research. Dependent samples t-test was used for statistical comparison. All data were collected during academic year 2021-2022. **Results:** Ninety-one percent (n=32) of the student population participated in both rounds of data collection. After using the ADVANCE platform for three months, first-year students' professional identity scores on the MCPIS-9 scale did not significantly change (t(32) = 0.105, p = 0.917). There was an increase in motivation scores on the Pharm-S scale, but the change was not statistically significant (t(32) = -0.519, p = 0.607). **Conclusions:** Overall, the ADVANCE platform aided with tracking students’ professional identity development, co-curricular activities, and continuous professional development activities. While we were unable to show a statistical improvement in

professional identity scores in this short-term study, longer-term use of the ADVANCE platform may be required to realize its full benefits in shaping professional identity and demonstrate a meaningful increase in the score.

**Infusion of Collaborative Leadership Curricula along the Pharmacy Education Continuum: The Building Blocks**

Abraham M. Jeger, Touro College of Pharmacy-New York, Elizabeth Unni, Touro College of Pharmacy-New York. **Objective:** Describe the building blocks of collaborative leadership curricula and their potential adaptation by other settings. **Methods:** In response to needs elicited by pharmacy academies for leadership curricula along the pharmacy continuum, the authors developed and implemented three leadership courses customized for each target audience—students, residents, and practitioners. The salient objectives for all three courses encompassed self-awareness, emotional intelligence, communication, ethics, resilience, trust, team building, diversity, equity, and inclusion. The practitioner course (Spring 2020) constituted a 20-hour certificate program. The course for PharmD students was a 3-credit elective (Spring 2020, Fall 2020, and 2021). A 15-hour certificate program (Spring 2021 and Spring 2022) was offered to the PGY2 residents. The courses relied upon a multi-modal educational delivery system—textbook (Leadership for Pharmacists by David Holdford), in-class discussions, classic TED Talks by diverse leaders, self-assessments, and experiential skill development. Depending on the target audience, the learning assessment included exams, written assignments, leader interviews, trainee presentations, and portfolio review. **Results:** To date, 49 trainees completed the respective courses. The anonymous, formal course evaluations focused on instructional methods, course resources, assignment relevance, faculty responsiveness, and classroom engagement. Feedback was consistently excellent on all aspects of course content and delivery. Typically, the overall course ratings yielded means of 3.9 to 4.0/4.0. While trainee feedback contributed towards course enhancements, mid-course adaptations were periodically made based on shared decision-making in response to pandemic challenges and constraints of virtual learning. **Conclusions:** The success of this initiative is evidenced by continuous enrollment and excellent feedback from all constituents. This success provided the impetus for the college’s establishment of a collaborative leadership institute as a visible infrastructure to catalyze further infusion of leadership curricula.

**Learning Experiences and Well-being of Pharmacy Students with Remote-Learning during the COVID-19 Pandemic**

Elizabeth Unni, Touro College of Pharmacy-New York, Batoul Senhaji-Tomza, Touro College of Pharmacy - NY, Kimberly Nguyen, University of Houston, John Lonie, Long Island University. **Objective:** With the surge of the Covid-19 pandemic, in March 2020, when academic institutions, including pharmacy colleges, shifted to remote-learning, faculty and students had to adapt to this rapid change. Regardless of personal preferences towards in-person or remote-learning, teaching and learning in pharmacy, and higher education in general, may never be the same. The purpose of this study was to identify remote-learning experiences and personal well-being specific to pharmacy students during the pandemic in a metropolitan commuter city. **Methods:** Pharmacy students from three pharmacy colleges in New York City were surveyed in January 2021 on 1) demographics, 2) personal well-being, 3) remote-learning experiences, and 4) pandemic and post-pandemic preferred learning modalities and reasons. **Results:** 268 P1, P2, and P3 students (20% response rate) completed the survey from the three colleges. While 55.6% of the respondents reported a negative impact of the pandemic on their well-being, 58.6% reported that the remote-learning gave them more time to study. Older students and those who had long commutes preferred remote-learning. When asked their preferred mode of pharmacy education delivery, 24.5% preferred remote-learning for all courses during the pandemic, 26.8% preferred traditional classrooms for all courses post-pandemic, and 60% preferred some type of remote-learning post-pandemic, especially senior classmen. Top concerns with remote-learning included lack of hands-on experience, grade concerns, and lack of interaction with classmates and professors. **Conclusions:** Overall, students felt that select components of remote-learning such as commute time gained and schedule flexibility were valuable. The impact of remote-learning depended on the student’s specific situation and resulted in the desire to integrate favorable elements moving forward. Future studies could assess their learning experiences and preferences after returning to campus.

**Let’s Collaborate! Assessing Health-System Pharmacists’ Interprofessional Collaboration by Health-System Type**

Jackie M. Zeeman, University of North Carolina at Chapel Hill, Kyle T. Fassett, University of North Carolina at Chapel Hill. **Objective:** To measure and compare
interprofessional collaboration of health-system pharmacists using the Assessment of Interprofessional Team Collaboration Scale II (AITCS-II) at various health-systems in different regions. **Methods:** Pharmacists across the state of North Carolina were invited to complete the AITCS-II in Fall 2021, responding to items about partnership, cooperation, and coordination on their interprofessional teams. Participants were recruited from various health-system types (eg, academic medical center, community health-system, federal/government health-system) in different regions (eg, western, eastern, central) of North Carolina. A two-tail t-test was conducted to examine the differences in the collaboration scales (ie, partnership, cooperation, coordination) on participants’ interprofessional teams. Pharmacists expressed feeling similar degrees of partnership (M=4.1, SD=0.6) and cooperation (M=4.1, SD=0.5) on their teams and lower amounts of coordination (M=3.7, SD=0.6). Pharmacists at academic medical centers (M=4.41, SD=.42) reported significantly more (p<.01) partnership than their counterparts at community hospitals (M=3.78, SD=.69). No differences were found regarding cooperation or coordination. **Conclusions:** Findings suggest health-system pharmacists experience more partnership and cooperation among their interprofessional teams than coordination. When comparing health-system types, health-system pharmacists working on interprofessional teams at academic medical centers experience greater degrees of partnership on interprofessional teams compared to community hospitals. Future research should further explore similarities and differences in interprofessional team collaboration across health-system types.

**Longitudinal Assessment of Empathy and Burnout in a Single Pharmacy Class Cohort**

Jaclyn D. Cole, University of South Florida Taneja College of Pharmacy, Melissa J. Ruble, University of South Florida Taneja College of Pharmacy, Jeanee Jacoby, University of South Florida Morsani College of Medicine, Lehigh Valley Hospital and Health Network, Amy Smith, University of South Florida Morsani College of Medicine, Lehigh Valley Hospital and Health Network, Shae Duka, Lehigh Valley Health Network, Joann Quinn, University of South Florida Morsani College of Medicine.

**Objective:** This longitudinal study evaluated trends of burnout and empathy among Doctor of Pharmacy students throughout their four-year enrollment. **Methods:** Two validated survey instruments were utilized, the Jefferson Scale of Empathy (JSE) and the Masiach Burnout Inventory (MBI). The MBI utilizes three categories, Professional Efficacy, Exhaustion and Cynicism. The Class of 2021 received QualtricsXM surveys at the start of matriculation (Year 1) and annually at the end of each academic year until graduation (Year 5). Final data reviewed both a snapshot of the final assessment (Year 5) and longitudinal data for students completing all 5 assessments. Statistics were evaluated with the Generalized Estimating Equation test for categorical data and the Friedman’s test for inter-quartile ranges (IQR). **Results:** Final analysis included 57 graduating students (Year 5, 62.6%) and 35 students with longitudinal data (38.5%). The majority (73.7%) of graduating students reported burnout, defined as scoring in the highest categories for either Exhaustion or Cynicism. Alternatively, a positive finding was observed with 71.9% of graduating students reporting moderate or high levels of professional efficacy. Overall, reported cynicism was statistically higher (p<0.0001) for Years 2, 3, 4, and 5 compared to Year 1. The only statistical increase (p=0.0167) in professional efficacy was seen from the start to the end of the first academic year. Empathy scores were highest for graduating students with a median of 113 (IQR 99-120). Although not statistically significant, students consistently reported high empathy levels throughout the program. **Conclusions:** Students reported high levels of burnout, professional efficacy and empathy throughout the pharmacy program. Maintenance of professional efficacy and empathy levels are positive markers of pharmacy training. However, attention is needed to address methods to limit burnout.

**Maximizing PPCP Integration: Successful and Innovative Examples from the Academy**

Aleda M. Chen, Cedarville University, Margarita DiVall, Northeastern University, Michael J. Gonyeau, Northeastern University, Teresa A. O’Sullivan, University of Washington, Mary Kiersma, Accreditation Council for Pharmacy Education, Jeannine Conway, University of Minnesota, Robin Zavod, Midwestern University. **Objective:** A recent national assessment found most institutions are integrating the Pharmacists’ Patient Care Process (PPCP). However, many programs are still determining best practices in comprehensive integration and assessment, as well as inclusion in experiential learning. Thus, the objective of this project was to describe successful and
innovative practices in PPCP integration. **Methods:** An interview script was developed and piloted using principles of appreciative inquiry. All interviewers were trained prior to conducting interviews. Faculty were contacted at institutions that had either published on efforts related to the PPCP in the literature or who had previously indicated a willingness to participate in further PPCP research. Interviews were conducted until content saturation was achieved, transcribed, and then analyzed qualitatively using an abductive approach and thematic analysis. **Results:** Innovative elements identified included the creation of a PPCP micro-credential, training videos related to the PPCP for student pharmacists and technicians, use of assessment data to modify curricular content to improve specific PPCP sub-domains (such as Plan or Monitor), development of PPCP templates for activities in courses, and rubrics to assess PPCP elements. While programs interviewed had plans for at least one PPCP aspect (e.g. curricular integration, continuous quality improvement derived from assessment data, or experiential integration and assessment), no programs had thoroughly addressed all areas. Most interviewees indicated an interest in sharing materials with other programs. **Conclusions:** Curricular integration of the PPCP continues to expand, but improvement in intentional integration in all faculty disciplines, across the entire curriculum, and deliberate assessment planning are still needed. Mechanisms for sharing resources across the academy to further enhance efforts related to the PPCP are strongly recommended.

**Microaggression and Gender Inclusive Care Communication Learning Module**

Megan N. Willson, Washington State University, Cheyenne Frazier, Washington State University, Kimberly C. McKeirnan, Washington State University. **Objective:** To determine the impact of a one-week educational module on student pharmacist knowledge, comfort, confidence and perception of the importance of gender inclusive care. **Methods:** A mixed methods approach was used to explore student pharmacist knowledge, comfort, confidence and perceived value through a one-week module. Students completed Harvard’s Implicit Association Tests for Sexuality and Transgender prior to the module. A knowledge assessment and survey were completed before and after the module. During the class session, students worked in small groups to complete a graphic to define terms (sex, gender identity, gender expression, and sexual orientation); identify the microaggression in a statement, and then convert the statement to inclusive language; and assess three case studies to apply the OWTFD (Observe, What do you mean?, Think, Feel, Desire) tool. The quantitative pre- and post-activity survey and knowledge assessment results were exported from Qualtrics into Microsoft Excel. The Mann-Whitney U test was used to determine p-values for Likert-scale questions. Free response answers were coded using first-level and second-level qualitative coding methods. **Results:** One-hundred five students completed the pre-activity survey and knowledge assessment, and 92 students completed the post-activity survey and knowledge assessment. Statistically significant changes from pre- to post-activity occurred in all question responses except for questions regarding confidence communicating with sexual minorities and individuals with different gender identity and sexual orientation from the respondent. The knowledge assessment demonstrated improvement overall from pre- to post-activity. **Conclusions:** Gender inclusive communication as well as recognition and correction of microaggressions are important skills for healthcare providers including student pharmacists. Use of an education module within the curriculum resulted in improved knowledge, confidence, comfort and perceived value for student pharmacists to provide gender inclusive care.

**Moving from Subjective to Objective PharmD Program Rankings: Developing a Tool for Meaningful Comparisons**

Benjamin J. Shultz, University of Illinois Chicago College of Pharmacy, Rosalyn P. Vellurattil, University of Illinois Chicago College of Pharmacy. **Objective:** US News & World Report determines pharmacy school rankings using subjective academic peer ratings of reputation and prestige. As this method does not weigh criteria uniformly, developing an objective tool to evaluate PharmD programs is needed to make meaningful comparisons. The purpose of this study is to demonstrate how quantitative metrics derived from common strategic priorities can be used to objectively compare programs. **Methods:** Content analysis was performed on strategic plans of the top 25 ranked US pharmacy programs to identify common priorities. The priorities were aligned to quantitative metrics based on available data from AAMS and Academic Analytics. Data were analyzed for the University of Illinois Chicago College of Pharmacy (UIC COP) and compared to the national average. All metrics were scaled to 100 points to establish a benchmark score. Weights were applied to each of the priorities to examine how different emphases influence the program’s score relative to the national average on research and funding, inclusivity, and students. **Results:** Seven strategic priorities were identified: student recruitment, inclusivity, research, funding, skilled graduates, faculty development, and student
services. Equally weighting the research and funding criteria and excluding all others, UIC COP scored 63.5 (national average 73.3). Weighting for inclusivity (50%), faculty development (25%), and student services (25%) increased the program’s score to 83.8 (national average 84.3). The program scored 87.0 with equal (25%) weights applied to student recruitment, inclusivity, skilled graduates, and student services (national score 86.2). Conclusions: Inclusivity and the student experience highlight the diverse strengths of a pharmacy program outside of the research and funding norm. To further extend utility of this tool, a comprehensive and consistent national database is needed; collaboration with AACP is essential.

National Cross-Sectional Survey: General Public’s Communication Preferences and Perceived Barriers Regarding Community Pharmacist-Delivered Naloxone

Grace A. Trull, UNC Eshelman School of Pharmacy, Zach J. Krauss, Cedarville University, Jitisha Patel, Shenandoah University Bernard J Dunn School of Pharmacy, Lindsey Hohmann, Auburn University- Harrison College of Pharmacy. Objective: The objective of this study was to describe the general public’s communication preferences and perceived barriers regarding community-pharmacist-delivered naloxone. Methods: A cross-sectional survey design was utilized. Adults ≥18 years living in the US were recruited using an Amazon Mechanical Turk online platform. Outcome measures collected via anonymous online survey included: perceived barriers to utilizing pharmacist-delivered naloxone services, measured using a 7-item Likert scale (1 = strongly disagree, 5 = strongly agree); and preferred pharmacist-patient naloxone communication style, measured using a 1-item multiple-choice question with three response categories (general advertisement, universal offer, or targeted offer). Study procedures were approved by the Institutional Review Board and all survey respondents indicated consent to participate. Results: Of 301 respondents, 48.8% identified as female, 82.1% White, and 43 years on average. Overall, mean[SD] perceived barriers to utilizing pharmacist-delivered naloxone were low/neutral (scale score: 2.93[0.78]). The most frequently reported barrier was discomfort asking the pharmacist for naloxone, to which 65.5% agreed or strongly agreed. Not wanting their neighborhood/community (54.1%) or family/friends (53.2%) to see them getting naloxone were also major barriers. Additionally, 86.7% of respondents preferred a general advertisement (flier/poster in the pharmacy) or a universal offer of naloxone (to any patients receiving prescription opioids), while only 13.3% preferred a targeted offer to patients at higher risk of opioid overdose. Conclusions: Social factors largely contributed to perceived barriers in pharmacist-delivered naloxone utilization, including discomfort asking the pharmacist and fear of community, friends, or family seeing the naloxone transaction. A universal offer or general advertisement is a preferred way to increase communication regarding naloxone compared to more targeted approaches.

Old Habits Die Hard: Longitudinal Changes in PharmD Student Learning and Study Strategies Inventory Scores

Zachary R. Noel, University of Maryland. Objective: The Learning and Study Strategies Inventory (LASSI) is a validated tool to measure students’ awareness and use of learning strategies related to skill, will, and self-regulation across ten different domains. Prior studies have demonstrated improvements in LASSI scores following an elective study skills course for first-year pharmacy students; however, whether these improvements are sustained over time is unclear. The purpose of this study is to evaluate whether improvements in pharmacy students’ LASSI scores are sustained one year following an elective study skills course. Methods: The LASSI was administered to first-year students at the start of the Fall semester (T1). During the Fall semester, students participated in the Essential Study Skills for Pharmacy Students elective. Following the course, students completed the LASSI again (T2). One year later, during the Fall of the second professional year, the same students completed the LASSI for the third time (T3). Differences in LASSI scores were compared using repeated measures of one-way ANOVA. A pairwise comparison was performed using the Bonferroni statistic. Results: Fifty-nine students completed all three LASSI assessments. Four out of ten domains (independence, selecting main ideas, anxiety, and motivation) were statistically significantly improved from T1 to T2; however, one year later (T3) three of these domains (independence, anxiety, and motivation) regressed to at or below the T1 scores. In addition, five other domains (test-taking, attention, self-testing, time management, and using academic resources) were all statistically significantly lower at T3 compared to T2. Conclusions: Courses aimed at improving pharmacy students’ learning and study strategies may provide short-term improvements; however, these benefits appear to wane over time. Schools and colleges should consider ways to promote sustained changes in learning and study skills.
Pharmacoeconomics Education in the PharmD Curriculum: A Gap Analysis of Industry Expectations

Georges Adunlin, Samford University, Serge Afeli, Presbyterian College, Askal Ali, Florida A&M University. Objective: To assess the knowledge gap between current pharmacoeconomics curricular offerings at U.S. Doctor of Pharmacy (PharmD) programs and present industry expectations and future needs. Methods: In this qualitative study, three sets of data were collected and compared, and a gap analysis was conducted. The Accreditation Council for Pharmacy Education (ACPE) standards, Content Areas of the Pharmacy Curriculum Outcomes Assessment® (PCOA®), and NAPLEX Competency Statements were reviewed to identify pharmacoeconomic skills and competencies for PharmD students to attain. Published studies were reviewed to characterize pharmacoeconomic-related topics covered in U.S. pharmacy schools. Industry employability skills data for PharmD graduates were gathered from real-time job data. Using thematic analysis, key recommendations were extracted regarding competencies, skills, approach to program delivery, and anticipated outcomes. Results: From our qualitative analysis, gaps between defined competencies and the current job market emerged. The top three competencies consisted of drug development expertise, scientific medical writing, and economic analysis. Four prominent soft skills were identified: communication, problem-solving, interpersonal, and analytical. The hard skills were classified into three groups: Basic/fundamental skills, conceptual/thinking skills, and business management skills. While industry employers emphasize the importance of hard skills, pharmacy educators emphasize the importance of soft skills. Overall, unlike many other pharmacy topics, pharmacoeconomics education in the PharmD curriculum is still relatively “theoretical”. Conclusions: As pharmacoeconomics continues to expand into more areas of healthcare, future practitioners must pursue and maintain competence in this field to ensure better outcomes for patients. Pharmacy accreditation bodies should update and expand pharmacoeconomics-related standards and competencies to reflect the industry requirement. Pharmacy schools should adapt their pharmacoeconomics education offerings to keep up with current and future industry needs.

Pharmacy Faculty Perceived Stress and Burnout

Omar F. Attarabeen, Marshall University, Lisa Nord, Marshall University, Kimberly Broedel-Zaugg, Marshall University. Objective: Perceived stress and burnout may impact wellbeing and productivity. This study aimed to assess these two constructs among pharmacy faculty in the US and identify the demographic characteristics that impact individuals’ inclination to exhibiting either of them. Methods: Following IRB approval, a total of 5,245 US pharmacy faculty were invited via Qualtrics to participate in a short survey. Faculty’s contact information was individually downloaded from the Internet (school and college websites). Stress was measured with the Perceived Stress Scale, whereas burnout was measured with the Oldenburg Burnout Inventory. Correlations were assessed using bivariate analyses, as applicable. Data was collected from November 2021 to January 2022. Results: After excluding 106 undeliverable invitations, responses were collected from 15% (n=774) of the population. Overall, pharmacy faculty displayed moderate perceived stress (18.2 on a scale from 0 to 40) and moderate burnout (40.1 on a scale from 16 to 64). Bivariate analyses revealed that faculty displayed significantly more stress and more burnout if they were female, younger, unmarried, non-tenured, had lower academic rank, had fewer years of work experience, or reported working more than 40 hours a week. Finally, faculty working in departments/units that include pharmacy practice displayed similar stress, but significantly more burnout compared to faculty working in departments/units that do not include pharmacy practice. Race and ethnicity had no impact on stress and burnout perceptions. Conclusions: Identifying faculty members who are at higher risk for perceived stress and burnout may allow for early interventions, which may reduce negative consequences and promote faculty’s productivity and wellbeing.

Pharmacy Students’ Perspectives About Spiritual Care and Spirituality in Pharmacy Education in Zimbabwe

Vimbai A. Rumhungwe, University of Zimbabwe, Paul Gavaza, Loma Linda University, Blessing Dzingirai, University of Zimbabwe. Objective: Spirituality and spiritual care (SC) are important parts of patient care. The objective of the study was to investigate pharmacy students’ attitudes and beliefs about spirituality and SC in pharmacy education and practice in Zimbabwe. Methods: This cross-sectional descriptive nationwide study used survey methods to gather data from pharmacy students enrolled at the University of Zimbabwe (UZ) and Harare Institute of Technology, the only two institutions of higher learning that train pharmacists in Zimbabwe. The 38-item survey instrument measured students’ perspectives about spirituality and SC as well as their demographic and religious characteristics. Results: Most of the 462 respondents were Christian (89%), female (54%) and attended the
UZ (63%). Most respondents agreed/strongly agreed that they would like to undertake coursework that will make them competent in providing SC to patients (52%), education in SC would improve their clinical performance (51%) and education that promotes spiritual well-being or integration will make them more empathetic and compassionate practitioners (63%). Pharmacy students also believed that more education on spirituality should be given to pharmacy students (48%), SC is an important part of pharmacy practice (74%), discussing patient’s spiritual or religious beliefs can improve the pharmacist-patient relationship (74%) and anticipated to incorporate matters of spirituality into their professional practice when they graduate (50%). Students’ spirituality and SC beliefs were positively correlated with their personal spirituality. Conclusions: Pharmacy students considered themselves spiritual and religious and had positive opinions about spirituality and spiritual care. They also anticipated that spirituality and spiritual care would be incorporated into their education and future professional practice.

Readiness for Team-Based Community Interventions: Preparing Learners Using an Interprofessional Virtual Simulation

Veronica Young, The University of Texas at Austin, Yiqiu Yan, The University of Texas at Austin, Lauren El-Assad, The University of Texas at Austin. Objective: Pharmacy and other health professions schools generally do not provide formal training for students on how to effectively engage with community stakeholders. The pandemic highlights the importance of team-based community interventions to address health concerns, particularly in underserved neighborhoods. The objective of this educational initiative is to develop an interprofessional virtual simulation that prepares learners to collaborate and engage with stakeholders to address community-identified health priorities. Methods: The 3-hour virtual simulation is designed to train participants on the collaboration skills needed to engage with a community task force. Participants are placed in interprofessional teams to address a community health concern using a 6-step change process that targets upstream factors. Each team is facilitated by advanced level students from pharmacy, social work, and other professions who received training on interprofessional, small group facilitation. A post-simulation survey was administered to evaluate the experience for quality improvement. Results: The virtual simulation trained 270 participants over four sessions. Participants included students and clinician educators from 14 professions including pharmacy, nursing, medicine, social work, nutrition, and dental hygiene. Participants rated the simulation positively (92%). Most reported the simulation helped participants learn with and from each other (96%) and about each other’s profession (78%). It promoted collaborative problem solving and mutual trust and respect. They gained new skills in collaborating with stakeholders, developing community action plans, and implementing interventions. The simulation encouraged participants to re-think collaboration with others to promote healthy communities. Conclusions: Virtual simulation can be used effectively to prepare students and clinicians for team-based community interventions using an evidence-based improvement model. Delivering this simulation virtually made it accessible to more participants. Integrating this type of experience into required curriculum should be considered.

Reimagining the Wheel: Aligning, Integrating and Adapting the PPCP as a Tool for Ethical Decision-making

James M. Nesbit, Harding University, Sarah Griffin, Harding University College of Pharmacy. Objective: To compare, connect and synthesize the “Pharmacists’ Patient Care Process” used in clinical Pharmacy Practice with the CARER 5-Step process for Ethical Decision-making to reveal the similarities and common objectives of the two models. Methods: Comparisons using Kenneth Burke’s “Cluster Analysis,” an applied critical and rhetorical thinking analytical tool was used to examine if the CARER 5-Step documentation strategies (“Clarify,” “Analyze,” “Resolve,” “Enact,” “Reassess”) conceptually match the PPCP model. (“Collect,” “Assess,” “Plan,” “Implement,” “Evaluate”). Results: Using Burke’s Rhetorical Analysis theoretical framework to compare the two models, it was revealed that the components of the Pharmacists’ Patient Care Process (PPCP) both paralleled and aligned with the CARER 5-Step Decision-making process. Both models place the patient at the center of the process. When compared and synthesized, the relationship between corresponding concepts revealed how a symbiotic and cohesive relationship between the processes exists. In other words, the two models are synonymous with each other. Conclusions: Building clear connections among the biomedical, clinical and social, and administrative aspects in pharmacy curricula can integrate and emphasize a more comprehensive view of the practice of pharmacy and expand the application of the PPCP model for use by pharmacy students, residents, faculty and clinicians. Recognizing and expanding the cohesive and complementary approaches of the PPCP model for both the more “technical” courses and “right-brained,” non-clinical but equally relevant courses can be a useful tool for training pharmacy students. The PPCP allows students to connect knowledge in
foundational sciences, research and patient care with less technical, yet equally important, social, interpersonal and ethical issues that may simultaneously or independently occur within the context of pharmacy practice by “reinventing the Wheel” without totally “reinventing” it.

**Relationship Between Health Literacy and Influence of Messaging on the Public’s Cancer Genetic Testing Decisions**

Chenyu Zou, Auburn University, Anthony Campbell, Auburn University, Kylie Sheats, Auburn University, Brandy Davis, Auburn University, Surachat Ngorsuraches, Auburn University, Winson Y. Cheung, University of Calgary, Natalie S. Hohmann, Auburn University. **Objective:** To determine how health literacy level relates to the general public’s perceptions of influential messaging for cancer genetic testing. **Methods:** A cross-sectional survey was delivered to the US general public using Qualtrics Panels. Participants read four statements in a hypothetical educational brochure: This genetic test will help your doctor choose the best treatment for you with 1) 100% certainty; 2) 80% certainty; 3) 50% certainty; and 4) The test would provide hope and peace of mind. Perception of each statement was significantly different for inadequate and adequate (mean[SD] 3.6[1.09] vs. 3.3[1.07], p < 0.05). Perceived influence of the “100% certainty” statement was significantly different for adequate and inadequate health literacy groups (mean[SD] 4.4[0.90] vs. 4.2[0.97], p < 0.05). No significant differences were found for the “80% certainty” statement. Perceived influence of the “50% certainty” statement was significantly different for inadequate and marginal health literacy groups (mean[SD] 3.6[1.09] vs. 3.3[1.07], p < 0.05) and inadequate and adequate groups (mean[SD] 3.6[1.09] vs. 3.2[1.09], p < 0.05). Perceived influence of the “hope and peace of mind” statement was significantly different for inadequate and adequate (mean[SD] 4.0[1.09] vs. 3.6[1.22], p < 0.05) and marginal and adequate groups (mean[SD] 3.8[1.12] vs. 3.6[1.22], p < 0.05). **Conclusions:** Perception of influential messages differed by health literacy level. Educational materials on cancer genetic testing should be tailored to health literacy level to optimize patient-clinician communication and shared decision-making.

**Storytelling Narratives for Healthcare Professionals: Inventing an LGBTQIA Cultural Competence Training Model**

Ashim Malhotra, California Northstate University, Jessica Pearce, California Northstate University College of Medicine, Kimberly Lau, California Northstate University College of Medicine, Jose Puglisi, California Northstate University College of Medicine, Tracy Yarbrough, California Northstate University College of Medicine. **Objective:** To identify and address the barriers experienced by the Sacramento LGBTQIA community in accessing healthcare, we designed and assessed a storytelling, narrative-based, testimonial-embedded cultural competence training module. **Methods:** Trainee participation was solicited through email and social media platforms aimed at students and faculty at health professions schools at our university. We compared leaners’ baseline and post-activity self-assessment of LGBTQIA cultural competence between two training models—GLMA-based online training and a locally-produced module embedding LGBTQIA community member narratives. For this, we solicited input from the LGBTQIA community related to the issues they have experienced accessing care and created several recorded testimonials of LGBTQIA community members’ lived experiences with healthcare. Learners were randomized to complete training with either the GLMA module or our storytelling-based module. Learners completed a pre-training evaluation of LGBTQIA cultural competence addressing confidence, motivation, and engagement. Subsequently, they completed the assigned training module followed by a post-training self-assessment. Responses were scored and comparisons were made using the Mann-Whitney-U test. **Results:** Internal consistency of the pre-and post-training instrument was high (Cronbach’s alpha = 0.82). Participants in both groups reported poor knowledge of resources available to LGBTQIA patients on the pre-training assessment; those who underwent the testimonial-based training reported improvements over those completing the GLMA module (p < 0.05). Both groups reported high pre-and post-training levels of confidence regarding LGBTQIA language and terminology use, comfort with discussing sexual health, attitudes toward declared identity, gender-based and/or familial roles, and healthcare rights/access. **Conclusions:** Storytelling-based training can be an effective and meaningful cultural competence training strategy. We will expand our work by recruiting a larger trainee
population including preceptors and professionals in the field.

Student Perception of a Simulation of Social Determinants of Health and Disparities Experienced by Patients

Kristin R. Villa, The University of Kansas, Brittany L. Melton, The University of Kansas. Objective: Structural forces are key factors in poor health outcomes and health inequality and inequity. Healthcare professional students must recognize the implications of social, political, and economic configurations on health and illness. The objective of this study was to determine student perceptions of a semester-long social determinants of health (SDOH) and health disparities simulation. Methods: First professional year (P1) students in an introductory course on cultural issues in patient care were assigned a character for a semester-long simulation. Each character had different assigned characteristics, where the classroom roughly approximated diversity within the United States. Throughout the semester, characters experienced hardships based on their combination of characteristics. At the end of the semester, students were asked to rate their perceptions of the simulation on their understanding of how SDOH and health disparities impact patients on a five-point Likert scale (1=strongly disagree to 5=strongly agree). Results: A total of 109 P1 students completed the reflection. Eighty-four students (77%) indicated a positive perception when asked whether the simulation impacted their understanding of how patients are impacted by SDOH, while twenty-five students (23%) indicated a neutral or negative perception. Ninety-one students (83%) indicated a positive perception when asked whether the simulation impacted their understanding of how patients experience health disparities, while eighteen students (17%) indicated a neutral or negative perception. Conclusions: Students found value in a simulation that demonstrated the variations in SDOH and disparities experienced by patients. Preliminary results were positive and suggest that a simulation where students experience hardships may increase their awareness of patient experiences.

SWOT Analysis of Pandemic Effects: Using Focus Groups to Explore the Student/Faculty/Staff Experience

Martha Ndungu, University of the Pacific, Allison Mac, University of the Pacific, Suzanne M. Galal, University of the Pacific, Marrien Farhadian Badlabo, University of the Pacific, Tahmeeneh Ghabadi, University of the Pacific, Mariam Guirguis, University of the Pacific, Deepti Vyas, University of the Pacific. Objective: To determine attitudes regarding the university’s response to the Covid-19 pandemic through a formalized SWOT (strengths, weaknesses, opportunities, and threats) analysis. Methods: Students, faculty and staff from the University of the Pacific, School of Pharmacy were recruited via email. Volunteers responded to survey questions regarding the Covid-19 pandemic, then were randomized into homogeneous focus groups conducted in February 2022 using the SWOT framework. Responses were transcribed and loaded into Maxqda Plus®. Descriptive statistics were used for survey results and SWOT analysis. Results: In the survey (n=55), 85.5% of respondents noted lack of motivation, and 61.8% noted attention deficit since the onset of the pandemic. Only 30% of respondents who noted lack of motivation felt that the university provided appropriate support/services. Similarly, only 14.5% felt that services were offered in the area of attention deficit. Regarding mental health issues, 32.7% reported increased anxiety, 29% reported loneliness, and 14.5% noted depression. Less than 10% felt the university provided opportunities to mitigate these issues. Ten 1-hour focus group sessions were conducted resulting in 404 statements transcribed and coded. Seven themes emerged: communication, adapting to virtual learning, COVID-19 safety protocols, interpersonal relationships, financial issues, student services and addressing competition in the job market. The top strength was in the area of adapting the learning process (43 statements), top weakness was university communications (71 statements), and the top opportunities and threats were regarding adapting the learning process (41, 22 statements respectively). Conclusions: The SWOT analysis identified areas which should be immediately addressed by the university and revealed several strengths and weaknesses which can drive future response to similar unforeseen situations.

Toward Automated Analysis of Course Evaluation Comments: Current Course Evaluation Utilization by Pharmacy Curriculum Faculty

Brandy W. Wilcox, University of North Carolina Eshelman School of Pharmacy, Jacqueline McLaughlin, University of North Carolina at Chapel Hill, Robert Hubal, University of North Carolina at Chapel Hill, Adam M. Persky, University of North Carolina at Chapel Hill. Objective: To assess utilization and perceptions of course evaluation comments by faculty that could be used to inform the creation of a course evaluation comment automated analysis program. Methods: Course instructors from the UNC Eshelman School of Pharmacy were recruited via email to participate in a 30-minute interview session. Previous course evaluation comments were
adapted to create a deidentified mock evaluation. Six interviews were conducted via Zoom, consisting of a think aloud protocol based on the mock course evaluation followed by a cognitive interview focused on goals and current utilization of comments, and common patterns and issues faculty search for. Interview transcripts were manually cleaned and deidentified. Transcripts were inductively coded by one researcher using MAXQDA. Results: Three overarching themes were identified: general faculty process (i.e., how faculty begin and analyze comments), comments utilization for course change (i.e., how faculty utilize comments in making course changes), and faculty search process (i.e., faculty approach to locating common patterns in evaluation comments). The most common subthemes included usefulness of comments, methods for tracking of comment patterns, and challenges with the large quantity of comments each semester. Conclusions: Faculty provided useful insight and feedback regarding the current state of the course evaluation process. These findings will inform the creation of the course evaluation comment automated analysis program in the next stage of the project.

Understanding Progress: How Pharmacy Programs Are Using Progression Assessments

Jill M. Augustine, Mercer University, Justine S. Gortney, Wayne State University, Michael Rudolph, Lincoln Memorial University. Objective: The purpose was to describe the current practices of progression assessments at US colleges/schools of pharmacy. Methods: A 29-item questionnaire was sent to assessment personnel in April 2021. Respondents were asked about their program’s use of assessments in progression decisions during 2019-2020; the design, development, and format of those assessments; and plans for future progression-related assessments. Additionally, given the timing of the survey, respondents were asked to provide information on the impact of COVID-19 on these assessments. Descriptive statistics were used to analyze quantitative items; open-ended items were analyzed using thematic analysis. IRB determined this research to be exempt. Results: Of the 139 programs, 78 responded (56%). A majority of respondents (67%, n = 52) administered or planned to administer at least one progression assessment during 2019-20. Variability existed in placement within curriculum, with the highest percent being embedded within lab-based courses and tied to either passing the course or constituting a significant portion of the course grade. Most using assessments for progression do so for the P2 (76%) and/or P3 (96%) year, with 75% of respondents indicating the purpose being to ensure student competency in meeting learning outcomes. Variation exists in the design and format of these assessments, without about half using a combination of written and performance-based assessments. Most (81%) did not use formal standard-setting methods to determine cut scores. Half of respondents made changes to progression assessments because of the pandemic; 75% of those making changes doing so for the mode of delivery. Conclusions: Variation exists amongst colleges/schools of pharmacy regarding the design and use of progression assessments within the curriculum. The limited use of formal standard-setting methods represents an opportunity for improvement.

Virtual Course Content Delivery of Pharmacy Management Effect on Student Pharmacists Performance

Julie Akers, Washington State University, Sophia Owens, Washington State University. Objective: To compare scores in a pharmacy management course over 4 years to determine if in-person versus virtual learning impacted student performance and to assess student comfort around virtual learning. Methods: Unpaired t-test was performed to scores between cohorts and the two campuses. Content was delivered in person for the class of 2021 and 2022 and virtually for class of 2023 and class of 2024, therefore were directly compared. A Qualtrics survey was directed to the class of 2024 with questions regarding preference on content delivery and comfort with virtual learning. Survey was open for one week and questions used a Likert-type scale. Results: No difference was seen between scores of the class of 2021, 2022, and 2023. A statistical difference was found between scores of the class of 2023 and 2024, with mean scores being 5.16 points lower in the class of 2024. No significant difference was found between the two campus locations. 20 students (21%) completed the survey. 95% reported having space conducive for learning virtually. 80% of students stated they were comfortable or extremely comfortable attending class virtually. 57.89% strongly agreed regarding feeling confident applying the material taught in the pharmacy management course. Conclusions: While no decline in scores were seen after the initial virtual delivery to the class of 2023, a significant decrease was seen in the class of 2024. Further data may inform the cause of the decline between the two years with virtual delivery, given virtually delivery along did not tie to scores. Access to space conducive to learning was not seen as a barrier to student learning and students felt confident in their ability to apply knowledge gained virtually.
Woke or Fast Asleep? Inclusion of Systemic Racism Education Within Doctor of Pharmacy Curricula


Objective: This study aimed to provide a multi-institutional assessment of systemic racism (SR) education in US Doctor of Pharmacy curricula. 

Methods: An electronic survey was developed and distributed to representatives at US colleges and schools of pharmacy (COP/SOPs). The survey assessed the inclusion of SR in the curricula, faculty involvement in teaching SR content, barriers to including SR content, and future curricular plans to teach pharmacy students about SR. Survey results were analyzed using descriptive statistics for institutional background information, curricular content, and barriers to inclusion. Chi-square test examined relationships between SR inclusion at public versus private programs. Fisher’s exact test assessed associations between traditional and accelerated programs. 

Results: Fifty-eight COP/SOPs provided responses that met inclusion criteria. Of the respondents, 84% indicated that teaching about SR and its impact on health and healthcare is either a low or extremely low priority. For 24% of respondents, SR was not currently included in their institution’s curriculum, while 34% indicated that SR was included in one or more courses or modules but was not a focus. Despite SR being offered in any didactic year, it was rarely included in experiential curricula. Commonly reported barriers to including SR education included lack of faculty knowledge and comfort with the topic and lack of curricular space. No significant differences were found between program types. 

Conclusions: Based on the current level of SR education and barriers to inclusion, faculty need training and resources to teach SR concepts within pharmacy curricula. The inclusion of SR concepts and guidance in ACPE standards could help to drive meaningful change and promote health equity.