MEETING ABSTRACTS

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ADMINISTRATIVE SERVICES
Completed Research
A Determination of Admissions Policies Regarding Repeat Coursework in US Pharmacy Schools. Stephanie Demers, South Dakota State University, Travis A. Van Ede, Daniel J. Hansen, South Dakota State University, Jane R. Mort, South Dakota State University. Objectives: Analyze admission policies on grade point average (GPA) calculation related to repeat pre-pharmacy coursework in schools of pharmacy. Method: A list of active pharmacy schools (n=124), including candidate and pre-candidate status, was obtained from the NABP website. Relevant demographics and admissions information was obtained from US pharmacy schools using the schools’ websites and telephone interviews. Eight schools were excluded from the study because they were direct-entry program (0-6) or unable to be reached. Schools were examined based on how repeat courses were calculated in the overall GPA and analyzed based on demographic characteristics. Results: Overall, 52.6% of US pharmacy schools (n=61) utilize the PharmCAS GPA, which includes all initial and repeat grades in the overall GPA. Of these schools, 19 carry out an additional calculation with only one grade counted for repeated courses. Conversely, 47.4% of US schools (n=55) do not use PharmCAS GPA and employ a variety of calculations. These calculations include 23 schools that average all grades, 12 schools use the best grade, 11 schools that use the final grade, 7 schools that use a combination of GPA calculations, 1 school that uses the first grade only, and 1 school that does not allow repeats. Schools in NABP districts 1-3 were more likely to utilize the PharmCAS GPA, which includes all initial and repeat grades in the overall GPA. Of these schools, 19 carry out an additional calculation with only one grade counted for repeated courses. Conversely, 47.4% of US schools (n=55) do not use PharmCAS GPA and employ a variety of calculations. These calculations include 23 schools that average all grades, 12 schools use the best grade, 11 schools that use the final grade, 7 schools that use a combination of GPA calculations, 1 school that uses the first grade only, and 1 school that does not allow repeats. Schools in NABP districts 1-3 were more likely to utilize the PharmCAS GPA (≥50%) than schools in districts 4-8. Implications: No overall trend was observed. However, schools that did not exclusively use the PharmCAS GPA may have more complete picture of each applicant due to the variety of reasons a student may repeat a course.

Accessibility, Timeliness, and Accuracy of ACPE Required Program Disclosure Information on Doctor of Pharmacy Websites. Mark A. Gales, Southwestern Oklahoma State University, Donald K. Woodward, Rutgers, The State University of New Jersey. Objectives: To identify the location, ease of access, timeliness and accuracy of ACPE required program disclosure information for potential applicants. Method: Pharm.D. programs with 2013 NAPLEX rates published on the NABP website were evaluated. Data was captured August 12-13, 2014. Accessibility was determined by website location and number of mouse clicks needed to identify and subsequently view the information. Timeliness was defined as the most recent year reported for on-time graduation rate, NAPLEX results, and reported measure(s) of student achievement. Accuracy was determined by comparing posted NAPLEX pass rates with NABP website data. Results: Web sites of 115 programs were evaluated with 31 programs having the information on or directly linked on the home page. The most frequently used sub-headings for the information were About (30) and Program/Pharm.D. (17). Mean required mouse clicks were 1.64 (range 0-4). All the information was on a single webpage for 103 programs. On-time graduation rates were reported for 2014 by 17 programs and for 2013 by 93. NAPLEX pass rates were reported for 2013 by 92 programs, for 2012 by 22, and for 2011 by 1. Measures of student achievement were reported for 2014 by 10 programs, for 2013 by 95, for 2012 by 3, and for 2011 by 1. NAPLEX pass rate accuracy was within 1% for 101 programs, over reported by 10, and underreported by 4. All ACPE required information was not readily identifiable for 6 programs. Implications: Inclusion of a last updated notation and more standardization in information reporting would increase utility to potential students.

Building Community: The Case for a Transparent and Inclusive Website Redesign Process. Shannon R. Tucker, University of Maryland, Rebecca J. Ceral, University of Maryland, Lisa Lebovitz, University of Maryland, Richard N. Dalby, University of Maryland. Objectives: The objective of this project was to redesign the School of Pharmacy website using an inclusive process where all members of the school community could contribute. Method: As the Internet has replaced paper-based marketing and catalog dissemination efforts, maintaining an engaging web presence that accurately represents the mission, vision and values of the school to its community at large is a challenging prospect as websites age. When faced with an aging website design and usability issues, the UMSOP embarked upon a website redesign process where community involvement and transparency were key. The multi-faceted process included (1) the development of an interdisciplinary team of faculty and staff, (2) the development of a user-research plan to inform design and development decisions in partnership with a consultant firm, (3) strategically timed community feedback sessions and (4) communication and governance plan. Results: While community involvement shaped the design and content appearing on the UMSOP website, the main outcome of this project was in the area of web governance. Committee and community recommendations established the need for a full-time web content editor to maintain, curate and write web-based content increasing the visibility of projects and initiatives within the school. Implications: Engaging the entire school community in the development of a web presence can improve alignment between a school’s physical and virtual operations.

Computer-Assisted Student Admissions Based on Predicted Academic Performance. Eugene Muratov, University of North Carolina at Chapel Hill, Margaret Lewis, University of North Carolina at Chapel Hill, Denis Fourches, North Carolina State University, Alexander Tropsha, University of North Carolina at Chapel Hill, Wendy C. Cox, University of North Carolina at Chapel Hill. Objectives: To enhance the admissions process by developing a series of predictive computational models for accurately forecasting the academic performance of students in the didactic-rich portion of a doctor of pharmacy (PharmD) curriculum. Method: All PharmD candidates (1,986) over three admission cycles were divided into two groups: 1) candidates admitted who completed the PharmD program with a PharmD GPA ≥ 3, and 2) the remaining candidates. The Random Forest machine learning technique was used in combination with eleven pre-admission parameters (the undergraduate and graduate grade point average, undergraduate GPA, Pharmacy College Admission Test composite score and subscores, presence of a four-year degree, college major, and selectivity index of undergraduate university attended) to predict the above student group assignment based on pre-admission data. Results: When all candidates were combined in
a single dataset, the model did not pass the external validation. However, this issue was rectified by dividing candidates based on their residency status. Developed models predicted candidates who graduated with high (PharmD GPA > 3.8) or low (PharmD GPA < 3) academic performance with the overall accuracy of 77%. These multivariate models were superior in the accuracy of predicting marginal groups to those obtained using only undergraduate GPA and composite PCAT scores. **Implications**: Models developed in this study can be used to improve the admissions process by acting as preliminary filters to quickly identify candidates likely to be successful in the didactic-rich portion of the PharmD curriculum. As a result, more time can be spent evaluating candidates’ non-cognitive attributes and their overall fit for the program.

**Evaluation of Student Expectations in a Distance Education PharmD Degree Pathway.** Sarah A. Treadway, Lake Erie College of Osteopathic Medicine - Bradenton, Katherine M. Tromp, Lake Erie College of Osteopathic Medicine, Nina Pavuluri, Lake Erie College of Osteopathic Medicine, Michelle Rodriguez, Lake Erie College of Osteopathic Medicine - Bradenton, Hershey S. Bell, Lake Erie College of Osteopathic Medicine. **Objectives**: Lake Erie College of Osteopathic Medicine (LECOM) School of Pharmacy (SOP) enrolled its inaugural class of twenty four students for the distance education (DE) pathway in August 2014. The DE pathway is a four-year program similar to the traditional program at LECOM, except that the majority of the didactic curriculum is delivered online via asynchronous lectures. Supplemental live instruction includes synchronous sessions throughout the school year and live activities on the Bradenton, Florida campus during the summer. As the pathway is new, and only the second to be offered in the US, student expectations were evaluated. **Method**: Following matriculation into the pathway, all students completed a 13 question survey aimed at determining student expectations. Baseline characteristics and student perceptions of ability to succeed also were evaluated. **Results**: Fifty nine percent of the class (n = 14) reported age 31-40 years and 80% (n = 20) indicated previous enrollment in online education. All students agreed/strongly agreed that they expected the DE pathway to be as rigorous as the traditional pathway, and all strongly agreed that they expected the program to provide opportunities for active learning. All students agreed/strongly agreed that effective time management skills and independence as a learner would enable them to succeed. **Implications**: Understanding basic demographics and expectations of students enrolled in a DE pathway allows faculty within the pathway to utilize teaching methods that align with the needs and expectations of this unique group. Additionally, it allows administrators and curriculum designers to develop a program that will facilitate student success.

**Exploring the Relationship between a Pre-Admission Program and Students’ Pre-Pharmacy Academic Success.** Daniel J. Hansen, South Dakota State University, Collin Townsend, South Dakota State University, Surachat Ngorsuraches, South Dakota State University. **Objectives**: To compare the academic success of pre-pharmacy students before and after the implementation of a pre-admission program. **Method**: Data from the 2010, 2012, and 2013 class of incoming freshmen pre-pharmacy students with an ACT ≥ 27, were compared in six different categories considered critical for continuation or acceptance in the pre-admission program. These included ACT composite score, high school GPA and class rank, first and second semester pre-pharmacy GPA, and first-year math-science GPA. Following the collection of the data in these six categories, the means of the data were calculated and interpreted to determine what, if any, differences arose between the three groups of students. **Results**: There was no statistically significant mean differences in the ACT composite score, high school GPA and class rank, first and second semester pre-pharmacy GPA, and first-year math-science GPA amongst the three groups of students (p-values ranged from 0.161 to 0.643). **Implications**: Despite being guaranteed an admission interview through their participation in the pre-admission program, students in the 2013 class performed at least as well in their first year as students in the 2010 and 2012 class. This shows that students in the pre-admission program did not lack the motivation needed to achieve at a level above minimum expectations.

**Feasibility of Using a Student-Reported Survey to Assess Flipped Learning Out-of-class Preparation Time.** Jason M. Yamaki, Chapman University, Daniel Tomaszewski, Chapman University, Siu-Fun Wong, Chapman University. **Objectives**: Chapman University, School of Pharmacy (CUSP) has committed to utilizing “Flipped Learning” in the curriculum. A Flipped Learning Framework (FLF) is being developed to guide faculty for integrated implementation of “Flipped Learning” and to monitor/manage student out-of-class workload. The FLF categorizes Flipped strategies in four levels which are defined by increase in level of intensity and complexity of active learning. These levels also correspond with projected student preparation time based on a pre-defined ratio of in-class to out-of-class preparation time. This pilot study aimed to evaluate the feasibility of using a student-reported survey to assess the projected student preparation time and to compare to the pre-defined ratio. **Method**: Faculty selected several “Flipped learning” strategies to use over three sessions. Students (n = 6) were provided a hardcopy of a 5-question survey to complete voluntarily at the end of the session to provide the preparation time. Results were compared to projected preparatory time. **Results**: All 6 students enrolled in the course completed the survey. The ratio of in-class time to projected preparatory times for the three activities approximated at 1:2.7, compared to the pre-defined ratio of 1:1. **Implications**: The design and execution of the survey provided the necessary student reported data in a small class size but do not support the feasibility of this approach in larger class sizes. Preliminary data suggested under-estimation of the pre-defined ratio. Future study is warranted to evaluate the most appropriate method and time of collection and the longitudinal change of preparation time throughout the curriculum in a larger sample size.

**Holistic Admissions Score is the Best Predictor of Student Achievement in a PharmD Curriculum.** Krystal McCutchen, The University of New Mexico, Donald A. Godwin, The University of New Mexico. **Objectives**: To compare holistic admissions scores against objective/subjective admission factors as predictors of academic success in the didactic portion of the PharmD program. **Method**: Various objective (prerequisite GPA, PCAT percentile ranks) and subjective (interview scores) admissions factors as well as a total, holistic admissions score for students entering 2009 to 2014 were collected as part of their admissions file. The PharmD GPAs for the first three years of pharmacy school were then correlated to the admissions data. **Results**: Data analysis reveals that all admission factors correlate with success in pharmacy school to varying degrees. The factors that showed higher correlations with academic success in the first semester of pharmacy school tended to be the strongest predictors for academic achievement throughout the six semesters of didactic study. Most interestingly, the holistic admissions score showed a high correlation with academic success throughout the didactic portion of the curriculum. As an example, for 2014 graduates, the total admissions score had the highest correlation with GPA the first semester of pharmacy school (r = 0.481, n = 71, p < .001). Total admissions score remained the
highest correlation for GPA by the end of the sixth semester ($r = 0.499, n=71, p<.001$). **Implications:** High scores in both objective and subjective factors were found to correlate with success throughout the didactic portion of the curriculum. A holistic admissions score, was also found to be a top predictor of success. The combination of both cognitive and non-cognitive factors used in the admissions process is a strong indicator of a successful pharmacy student.

**How PharmD Students Perceive and Reflect on Direct and Sometimes Uncomfortable Conversations about Professionalism.** Cherokee Layson-Wolf, University of Maryland, Richard N. Dalby, University of Maryland, Lisa Lebovitz, University of Maryland, Shannon R. Tucker, University of Maryland, Heather B. Congdon, University of Maryland, Margaret A. Hayes, University of Maryland. **Objectives:** To describe PharmD student perceptions of required professionalism discussions **Method:** Each semester P1, P2 and P3 students were required to attend a mandatory class meeting that targeted each of the ACCP Tenets of Professionalism and included frank discussion of the impact of unprofessional behavior. At the end of each discussion students were asked to take a voluntary perception survey on whether they and their colleagues embody the tenet, and whether they believe the session will contribute to their and their classmates’ professional development. Open-ended questions prompted reflection on main discussion points and suggestions for future topics. **Results:** • Self-perception of professionalism rated higher than perceived classmates’ behavior of the same tenet, and was highest rated in P1 fall (9.66/10). The most positively perceived classmate behavior was in also in P1 fall (9.05/10). • Student belief that these professionalism discussions will contribute to their and their class’s professional development increased between the fall and spring meetings. • The number of students self-identifying with their school ID number increased across class years and between fall and spring, especially in P1 (10% in fall to 29% in spring). • Self-identifying students rated themselves higher and their classmates lower than the anonymous group on the quantitative questions. Those who self-identified were more likely than those who responded anonymously to provide take away comments, and almost twice as likely to give suggestions for future topics. **Implications:** Professionalism should be discussed openly, regularly, and in a non-judgmental environment, and include examination of actual incidents that can impact reputation and future employment.

**Increasing Transparency and Engagement in the ACPE Self-Study Process.** Jeff Fortner, Pacific University Oregon, Michael E. Millard, Pacific University Oregon, Fawzy Elbarbary, Pacific University Oregon, Jeremy A. Hughes, Pacific University Oregon, Leslie L. Devaude, Pacific University Oregon, Catherine E. Marlow, Pacific University Oregon, David G. Fuentes, Pacific University Oregon, Jennifer M. Jordan, Pacific University Oregon, Doug A. Meyer, Pacific University Oregon. **Objectives:** Describe a method of completing the ACPE Self-Study process to maximize transparency and engagement with the process among faculty, staff, students, alumni, administrators, and other stakeholders. **Method:** Our Executive Committee presented faculty and staff with three options to organize the self-study team and process. After discussions and surveys we selected the option to have our self-study team be composed of the assistant deans, faculty representatives, and staff. The self-study objectives were transparency (involving stakeholders), accuracy (data validation), and honesty (weaknesses and strengths). The three-phase year-long process began with an inventory, evaluation, and analysis of available data and executive reports. If data were missing, our assessment committee located or collected it. The next phase was spent writing narrative for all standards. During the final phase the narrative was distributed to all internal and external stakeholders for input. We incorporated stakeholder feedback and edits at various points prior to the final submission to ACPE. Throughout the process all committees, including student representatives, were involved in the self-study. **Results:** The ACPE Site Evaluation Team commended our Self-Study process on its completeness, transparency, and continuous-quality improvement, stating the content appeared thoughtful and honest, supported by internal and external stakeholder interviews mirroring the self-study findings. Our stakeholders appreciated the opportunities to provide input on the self-study content. **Implications:** Using a self-study process with objectives of transparency, accuracy, and honesty, while including multiple opportunities for internal and external stakeholder involvement, can increase transparency and engagement with the process, leading to long-term gains in program effectiveness.

**Leveraging Sponsor Contributions to Stimulate Student Innovation through a Co-Curricular Leadership Award Program.** Jane R. Mort, South Dakota State University, Dennis D. Hedge, South Dakota State University. **Objectives:** Evaluate the impact of a co-curricular, corporate funded leadership award program in developing student innovation as evidenced by scholarly work. **Method:** The College sought to develop innovative leaders through a project award process ($2250/award) funded by Walmart. Since 2011, students applied for leadership awards, carried out the winning project during the summer months, reported the results in the fall, and subsequently distributed their findings. **Results:** From 2011 to 2015, five project awards were made to ten students who worked with seven faculty mentors. Projects included analysis of minority patients’ interpretation of auxiliary labels, medication take back program, medication reconciliation project in a community pharmacy, medication reconciliation service in a clinic, and health literacy study of college students from select majors. Innovation is evidenced through their presentation of results nationally via two journal articles, one podium presentation, and two poster presentations. Results were also presented at state conventions in the form of two posters. In addition, two projects received the first place award in the Professional Student Poster Competition of the College of Pharmacy Research Days. This program demonstrated successful innovations in a very short timeframe since projects often take a significant amount of time to progress from concept to scholarly completion. **Implications:** Colleges are seeking to address the CAPE 2013 Outcome statement focused on innovation. Co-curricular experiences are encouraged for professional development of the affective domain (ACPE Standards 2016 — Standard 12.3). The success of this co-curricular leadership award program demonstrates an opportunity to utilize sponsor funds to foster students’ innovation.

**Multi-Dimensional Curriculum Mapping to Assess Programmatic Student Learning Outcomes.** Jason M. Yamaki, Chapman University, Ronald P. Jordan, Chapman University, Siu-Fun Wong, Chapman University. **Objectives:** The Chapman University School of Pharmacy (CUSP) Student Learning Outcomes (SLOs) which consists of five domains (D1-5); personal/professional development (D1), patient-care delivery (D2), population-based care delivery (D3), inter-professional education (D4), and advanced pharmaceutical research and practice (D5), were developed to define the professional competencies and outcome expectations of CUSP graduates. To monitor the appropriate delivery (breadth vs. depth) of the SLOs through the curriculum, courses were mapped to the SLOs to develop a global curriculum map. **Method:** Each course objective is mapped to the depth of the SLOs to be achieved at the completion of the course. Depth is categorized by four cognitive/behavioral levels: Foundational, Intermediate, Advanced,
and Mastery, which are reflective of critical thinking/reasoning/reflection skills. Data were collected and analyzed to determine cumulative coverage of each SLO domain, cognitive levels per trimester, and SLO domains per trimester. Results: Cumulatively, D2 was most frequently covered at 54.8% and D4 was least at 7.8%. Except for D4 where Mastery level reached 15%, depth of D1, 2, and 3 predominately (≥94%) composed of the lower 3 cognitive levels. Only 26% of Mastery level originated from the didactic portion of the curriculum. As the curriculum progressed the foundational level decreased from 91% to 2% and Advanced level increased from 7.5% to 85%. Implications: D2 being the most covered domain and the depth trending toward higher cognitive levels throughout the curriculum aligned appropriately with our program goals. The low percentage of D4 and high percentages of the lower three cognitive levels suggested an area for quality improvement.

New Construction vs. Renovation: Two Approaches to Implementing Interprofessional Education Curricula. Burgunda V. Sweet, University of Michigan, Nancy A. Mason, University of Michigan, Anica Madeo, University of Michigan, Bruce A. Mueller, University of Michigan. Objectives: Many universities have adopted campus-wide, day-long interprofessional events to meet new accreditation standards. Few have implemented semester-long courses involving students from multiple health disciplines. This study evaluated the implementation challenges of two semester-long interprofessional education (IPE) courses. Method: The first effort reenvisioned an existing Service Learning course to encourage participation of students from other health disciplines. The second, Team-Based Clinical Decision Making, built a new course using a team of 11 faculty from dentistry, medicine, nursing, pharmacy, and social work. The benefits and challenges of developing each of the courses were compared. Results: The pharmacy-based Service Learning course, required for all first-year pharmacy students, is an IPE elective for other health science students. The course enrolls 40 pharmacy students and 25 students from other disciplines, mostly kinesiology and public health. Team-Based Clinical Decision Making, which enrolls over 250 students from five schools, is a required course for some students (pharmacy, dentistry, subset of social work) and an elective for others (medicine, nursing). Both courses faced significant logistical challenges (e.g., space in curricula, common time in schedules, teaching space for active learning, tuition stream) and course infrastructure challenges (e.g., credentialing, grading, absence policies). Implications: The challenge before health science schools is to define efficient and effective ways to incorporate meaningful IPE experiences into their curricula. Revising an existing course allowed for a quick launch, but challenges (e.g., crediting, grading, absence policies). Results: Faculty members reported that they preferred a voluntary program with a fluid structure. An initial survey indicated that 83% of faculty members were interested in a mentoring program. Following input received from an initial workshop, faculty favored a self-selected peer-mentoring approach where they would form either one-to-one or group-based mentorship cohorts in order to address mentoring needs. A second workshop focused on self-identification of needs and highlighted areas each faculty member valued as goals of mentoring. The latest workshop addressed the need for additional programmatic structure to facilitate further faculty development of self-identified career goals. Currently, 20 out of 23 faculty members are participating in the mentoring program (86%). Additionally, 85% of faculty members also report having valued informal mentors. Challenges identified as part of establishing our mentoring program include balancing programmatic structure with the flexibility necessary to meet a wide range of faculty needs and desires. Implications: Implementation of a faculty-driven peer-mentoring type of program may be a feasible and more workable approach for newer programs with mostly junior faculty members.

Pharmacy Curriculum Outcomes Assessment (PCOA) as Predictor of Performance on NAPLEX. Jane M. Souza, St. John Fisher College, David J. Hutchinson, St. John Fisher College, Lalani M. Lenhard, St. John Fisher College. Objectives: The purpose of the study was to respond to students’ inquiry regarding the relationship between student performance on the PCOA administered in early spring of the P3 year and performance on the NAPLEX administered post-graduation. Method: PCOA scores for two of the four content areas, Pharmaceutical Sciences and Clinical Sciences, resulting from administration of the assessment for P3 students in 2012 and 2013 were compared to the same student scores for the 2013 and 2014 NAPLEX taken post-graduation. A Pearson product-moment correlation coefficient was calculated to measure the linear correlation between the two sets of exam scores. Additionally, simple linear regression was used to explain the two content areas as a predictor in variability on the NAPLEX Score. Results: The Pearson product-moment correlation coefficient for the combined PCOA content areas, Pharmaceutical Science and Clinical Science scores, was r = .572. A linear regression model established that PCOA Pharmaceutical Science and Clinical Science scores could statistically significantly predict NAPLEX scores, p < .0005, and accounted for 32.7% of the explained variability in NAPLEX score among the sample. The regression equation was: (NAPLEX) = 51.4 + 0.70 (PCOA Pharmaceutical Science + Clinical Scores) Implications: Students taking the PCOA exam in the P3 year of their PharmD program may find value in using their performance on the assessment in the areas of Pharmaceutical Science and Clinical Science to predict their performance on the NAPLEX which is blueprinted to these areas of study.

Predictors of Academic Success in the Second Professional Year of a PharmD Program. Beverly S. Hamilton, South College, Pranav K. Gandhi, South College. Objectives: To determine predictors of academic success in the second year of an accelerated (3-year) PharmD program at the South College School of Pharmacy (SCSOP). Method: Study sample consisted of 98 pharmacy students across two cohorts (32 in the class of 2014 and 66 in the class of 2015) at the SCSOP. A Comprehensive Abilities Assessment (CAA) was administered to pharmacy students at the end of their 1st and 2nd professional years. The primary outcome variables utilized in this study were cumulative year 2 GPA and CAA year 2 scores. Pearson’s correlation was used to examine the association between specific variables of interest (e.g., PCAT, age, gender, among others). Two separate multiple regression models were conducted to evaluate the predictors of the two outcome
variables, adjusting for demographics, preadmission, and progression variables. Statistical analyses were conducted using SAS version 9.3 and the a priori alpha error was set at $p \leq 0.05$. South College IRB approved the study protocol. Results: The mean age of the students was 25.9 years (range: 21-50 years) and majority of the students were females (62.2%). Higher CAA year 1 scores and cumulative year 1 GPA were significant predictors of CAA year 2 scores ($p < 0.05$). Likewise, we found higher CAA year 1 scores, cumulative year 1 GPA, and CAA year 2 scores to be significant predictors of cumulative year 2 GPA scores ($p < 0.05$). Implications: Our study findings can potentially have a significant impact on several functional components within the SCSOP, including academics, admissions and student support services.

Scope of ACPE Required Website Disclosures Reported by Doctor of Pharmacy Programs. Donald K. Woodward, Rutgers, The State University of New Jersey, Mark A. Gales, Southwestern Oklahoma State University. Objectives: To quantify the number and type of student achievement measures reported to satisfy the ACPE Policy on Program Disclosure of Specific Information. Method: Pharm.D. programs with NAPLEX pass rates for the class of 2013 published on the NABP website were evaluated on August 12-13, 2014. Programmatic approaches to reporting mandatory on-time graduation rate (OTGR) for the most recent class and most recent year’s NAPLEX results for first-time test takers were evaluated. Program-determined measure(s) of student achievement were reviewed, categorized broadly, and evaluated separately. Results: Websites of 115 programs were included in the study. Multi-year NAPLEX trends were reported by 55% of programs. Graduation and retention data beyond OTGR; such as delayed graduation, withdrawal, or academic dismissal, was reported by 60% of programs. Multi-year, OTGR was reported by 40% of programs. A mean of 2.3 (range 0-6) program-determined measures for the most recent graduating class were identified, while 3% of programs did not provide an appropriate outcome measure. Two or more measures were reported by 72% of programs. Categories reported were GPA, and CAA year 2 scores to be significant predictors of cumulative year 2 GPA scores ($p < 0.05$). Implications: These data provide evidence that the MMI is a useful and valid tool for candidate selection at a satellite campus. Additional interviewer training and refined scenarios could reduce construct-irrelevant variance and strengthen the model.

Strategies for Increasing the Diversity of the Healthcare Workforce: Incorporating Key Stakeholders Perspectives. Andrea L. Wall, University of Cincinnati. Objectives: To address the lack of healthcare provider diversity and a healthcare workforce shortage the Colleges of Allied Health, Medicine, Nursing and Pharmacy at the University of Cincinnati Academic Health Center received internal funding to assess and develop a plan for an educational pipeline to recruit underrepresented students into their various healthcare degree programs. Method: Utilizing a qualitative interview process the multidisciplinary team conducted interviews with several universities to learn of best practices, and, held 20 town hall meetings with those individuals and organizational groups who have a stake in education and health in the Greater Cincinnati Community. Standardized questions were used to conduct the interviews and the interviews were recorded and transcribed. Transcription of interviews were reviewed by the team for evaluation. Results: Extensive review of the interviews indicated four common themes among the different constituencies interviewed. The themes were academic support, mentoring, parental support and community engagement. These themes served as the basis to develop strategies for increasing the diversity of the student body at the Academic Health Center Colleges. The strategies include curricular and co-curricular activities for students in primary and secondary schools. Implications: Outcomes of the project served to develop a sample pipeline program, provided an impetus for inter-professional collaboration, and facilitated a successful partnership between the university and the local community.

The Multiple Mini-Interview as an Admission Tool for a PharmD Program Satellite Campus. David Singer, University of North Carolina at Chapel Hill, Jacqueline McLaughlin, University of North Carolina at Chapel Hill, Wendy C. Cox, University of North Carolina at Chapel Hill. Objectives: To assess the use and validity of the Multiple Mini-Interview (MMI) as an admission tool for a satellite campus using three-facet multifaceted Rasch measurement (MFRM). Method: In 2013, the MMI was implemented as part of a new admissions model at the UNC Eshelman School of Pharmacy. The MMIs were held concurrently on both the Chapel Hill campus and the satellite campus in Asheville, NC. On the Asheville campus, 39 candidates were assessed in the MMI by 12 raters in a station MMI producing 273 total ratings. Scenarios at each station were based on a bank of validated scenarios designed to assess a single construct. Training for raters included an online and in-person training session. A three-facet MFRM was used to determine the variance in candidate ratings attributable to rater severity, candidate ability, and station difficulty. Results: Rasch measures accounted for 60% of total variance in candidate scores. Rater severity accounted for 20.62% of the variance, candidate ability accounted for 35.27% of the variance, and station difficulty accounted for 4.11% of the variance. No raters’ Infit or Outfit MnSq scores were greater than 1.7 and only a single rater (8.33%) had a score less than 0.5. Implications: These data provide evidence that the MMI is a useful and valid tool for candidate selection at a satellite campus. Additional interviewer training and refined scenarios could reduce construct-irrelevant variance and strengthen the model.

The Well-Rounded Applicant: Admissions and Other Data as NAPLEX and MPJE Performance Determinants. Fadia T. Shaya, University of Maryland, Viktor V. Chirikov, University of Maryland, Lisa Lebovitz, University of Maryland, Lauren S. Schlessselman, University of Connecticut, Shauna M. Buring, University of Cincinnati. Objectives: The objective of this project was to identify the determinants of better performance for students taking the NAPLEX and MPJE. Method: We collected data on 1012 PharmD students who graduated from the Schools of Pharmacy at University of Maryland, University of Cincinnati, and University of Connecticut over 2011-14 and took the NAPLEX and MPJE. Using ordinary least squares regression, we evaluated the following factors considered to be associated with higher scores on the two examinations: 1) pre-admission criteria such as PCAT composite and subtest scores, cumulative GPA at admissions, and type of degree from the institution prior to pharmacy school; 2) cumulative GPA at the completion of the PharmD program and duration of study, 3) age, gender, and geographic location at the time of application to pharmacy school. Results: Across the three schools, PharmD students differed by age, race, composite PCAT score percentile, and cumulative GPA at admission and completion. Multivariate models resulted in good fit and explained similar variation in NAPLEX (R-sq = 0.37) and MPJE (R-sq = 0.38) scores. Factors associated with higher NAPLEX scores included higher percentiles on PCAT chemistry and verbal ability, while higher percentile on PCAT indicated four common themes among the different constituencies interviewed. The themes were academic support, mentoring, parental support and community engagement. These themes served as the basis to develop strategies for increasing the diversity of the student body at the Academic Health Center Colleges. The strategies include curricular and co-curricular activities for students in primary and secondary schools. Implications: Outcomes of the project served to develop a sample pipeline program, provided an impetus for inter-professional collaboration, and facilitated a successful partnership between the university and the local community.
reading comprehension correlated with higher MPJE scores. Higher final PharmD GPA was associated with higher scores for both exams. Male students had higher while those older than 25 years had lower NAPLEX scores, respectively. **Implications:** Schools should explore whether additional student services support can positively impact NAPLEX and MPJE scores for PharmD students who entered the program with low PCAT verbal ability and reading comprehension.

### Theoretical Models

#### Assessing Faculty and Student Leadership Utilizing the Leadership Practices Inventory

**Method:** Two institutions are utilizing the Leadership Practices Inventory (LPI) as a means to strengthen leadership development of students and faculty. One SOP is using the LPI to measure students’ leadership skills in the first and third years to assess leadership development over time. Another is measuring faculty leadership development with the intent of improving academic advising and faculty-student relationships. **Results:** The LPI is a behaviorally-focused survey instrument guiding respondents to take specific behavioral actions to develop leadership skills. After taking the LPI, students are coached in an effort to develop and improve their skills. Faculty will use the LPI to inform professional development plans and annual goals. **Implications:** Implementation, evaluation, and assessment methods will be shared for utilizing the LPI as a means to build leadership capacity among students and faculty. Results, outcomes, and recommendations for process improvement and expanded use of the LPI will also be shared.

#### Development and Implementation of Conceptual Framework for Mentoring Students in Academic Difficulty

**Method:** Students in academic difficulty at our institution are assigned a faculty mentor through the duration of their academic recovery period. To provide a framework for this relationship, we developed guidelines to facilitate effective behaviors between mentor and mentee. A literature search was conducted using Pubmed and ERIC with the keywords mentoring, guidelines, and academic difficulty. Table of contents in pharmacy, undergraduate education, and student service journals were reviewed and a comprehensive search of academic and student affairs departments’ mentoring programs was conducted. **Results:** Only one mentoring program specifically for academic difficulty was located during the review of literature and mentoring programs. Resources from general higher education and pharmacy specific studies evaluating academic difficulty were reviewed and adapted to create standards of practice for mentoring. The guidelines include methods for identifying achievement barriers and improving study skills, institutional policies, and goal development sheets. A list of internal and external resources involving counseling, accommodations, and study skills is maintained within the document. Guidelines are distributed to faculty at the time of the assignment of an academic mentee. **Implications:** A conceptual framework and guidelines to assist faculty mentoring students experiencing academic difficulties are presented. These could be utilized as a model that schools can utilize to develop and implement effective academic mentorships.

#### Flipping Pharmacy Education: Supporting Faculty through the Transition to a Learning-Centered Environment

**Method:** To inform this process and build a comprehensive faculty development plan, data are being gathered from several sources including feedback from workshops, individual coaching sessions, and small work group discussions. The FLF is being developed collaboratively with input from several stakeholders including faculty, staff, and administrative leaders. **Results:** (1) The FLF divides learning activities into four levels so faculty can increase the intensity and complexity of the flipped learning experience with the intention of enhancing student engagement and critical thinking. The FLF may inform the selection of different types of learning activities to align with cognitive learning outcomes. (2) It is innovative for an entire School to provide a model of educational innovation and offer varied levels of support and professional development opportunities for faculty. By integrating the FLF and faculty development plan, we expect to generate ideas about future areas of programming to ensure faculty and student success. **Implications:** Both the FLF and the faculty development model provide consistent terminology, recommended teaching and learning strategies, structure for course development, and institutional support for achieving learning outcomes.

#### Preparing Pharmacists for Practice Change – the RETAE Framework

**Method:** This research synthesizes the contributions of three overlapping models that are useful for preparing pharmacists and the profession for change: Continuing Education (CE), Continuing Professional Development (CPD) and Knowledge Translation (KT). Although valuable, these models are unable capture the unique needs of pharmacists at this point in evolution of the profession. As a result, the RETAE Model (Reflection, Education, Transformation, Application, and Evaluation) was developed as a conceptual framework customized to the pharmacy context to more accurately connect to the needs of pharmacists. **Results:** “Reflection” identifies evidence-care gaps in practice and learning needs.
“Education” is foundational in building knowledge, skills and confidence to promote change. “Transformation” is necessary both personally and professionally. It challenges pharmacists to self-reflect, develop new perspectives and explore new roles. “Application” represents implementation of change in the context of the social and political environment of the healthcare system. “Evaluation” encourages assessment of the impact of educational strategies on pharmacist satisfaction, application to practice and healthcare outcomes. **Implications:** RETAE can be used as a framework for designing and delivering educational activities and for ensuring that best evidence is applied to practice. RETAE also has the potential to inform policy surrounding practice change and the expanded scope for pharmacists.

**Utilization of RxOutcome™ to Develop Curricular Integration Content Mapping.** Siu-Fun Wong, Chapman University. **Objectives:** To prepare pharmacy graduates to function in integrated healthcare systems and manage patients with complex medication profiles as defined by the CAPE Educational Outcomes, curricular integration is critical to promote appropriate breadth and depth in students’ learning progression throughout their pharmacy education. The establishment of curricular integration requires intricate and elaborate planning of the course content. This education development model outlines the use of an electronic learning management system, RxOutcome™, to develop a comprehensive course content tracking system to monitor and manage the development and delivery of the didactic curriculum. **Method:** Using the schedule information in the course syllabi and the “Course to age the development and delivery of the didactic curriculum.**

**Biological Sciences**

**Completed Research**

ACT Scores Do Not Predict Pre-Pharmacy Students’ Metacognition Awareness. Margaret A. Weck, St. Louis College of Pharmacy, Claude J. Gaebelein, St. Louis College of Pharmacy, Chelsea Minor, St. Louis College of Pharmacy. **Objectives:** Determine if ACT scores (either composite or subscores) can predict pre-pharmacy student performance on a self-reported inventory of aspects of metacognition. **Method:** All 198 incoming freshman at the St. Louis College of Pharmacy were administered the 52 question metacognition awareness inventory (MAI) of Schraw and Dennison (1994) modified for responses on a 5 point Likert scale. Completed surveys were obtained from 153 students (77% response rate). Composite scores were calculated, as averages of ratings on specific items, for both knowledge of cognition (KC) and regulation of cognition (RC) factors. **Results:** Data were linked to ACT composite and sub-scores which had been submitted the previous spring, and were analyzed by calculating Pearson product-moment correlation coefficients among the ACT composite and sub-scores and metacognition factors. No correlation coefficients approached statistical significance. E.g., that between ACT composite and RC was 0.099, and that between ACT composite and RC was 0.095. Similar results were obtained for the ACT subscores. Our data consistently showed little relation between ACT achievement scores and MAI performance. **Implications:** If metacognition, the ability to reflect constructively on one’s thinking and regulate changes to improve decision-making, really is a fundamental contributor to effective health care practice among pharmacists (Hill and Kirkwood, 2005), then the use of ACT scores alone is an insufficient index of knowledge of cognition or regulation of cognition among matriculating pre-pharmacy students.

Assessment of Accommodations in Learning Styles by Students in an Accelerated Pharmacy Program. Leslie L. Devaud, Pacific University Oregon, Courtney M. Kraus, Pacific University Oregon, Paul G. Michael, Pacific University Oregon, Jeff Fortner, Pacific University Oregon, Ashim Malhotra, Pacific University Oregon. **Objectives:** Pharmacy education requires learner acquisition of disparate content. The 2016 standards emphasize multimodal development including growth in professionalism, communication, and leadership. Content delivery poses challenges. We investigated whether 1) pharmacy students evinced a dominant learning style (DLS), 2) correlation existed between DLS and demographic factors such as gender, age, undergraduate degree, type of prior work experience, and 3) there were changes in DLS over time. **Method:** DLS was determined by the Pharmacists’ Inventory of Learning Styles (PILS) survey, which was administered to all students in the P1 and P2 years of our three-year pharmacy program. Data were collected at two time points: 1) beginning of the academic year (N = 166), and 2) during the second term in the program (N = 144). Demographic questions were added to the survey. **Results:** Our data confirm findings from other groups that pharmacy students evince “Assimilation” as the DLS. Thus, for 166 students surveyed in fall and 144 in spring (P1 and P2 combined), 48.8% of former and 51.4% of the latter were assimilators, with a right shift over time. Convergers, Divergers, and Accomodators were the next most common, in that order for the fall survey, while exposure to pharmacy academia over a semester changed that order to Convergers, Accomodators, and Divergers. There was not a statistically significant relationship found between DLS and age, gender, undergraduate degree, or prior experience. **Implications:** Domination of one learning style over another and a temporal shift in DLS suggests value in shifting curricular, assessment, and programmatic approaches to pharmacy education.

C.A.P.E-talizing the Pharmacology Classroom: Integrating Interprofessional Collaborative Exercises to Teach Renal Pharmacology. Ashim Malhotra, Pacific University Oregon. **Objectives:** The 2016 ACPE standards place emphasis on seamless integration of C.A.P.E domain 3.4 in foundational science education. We developed a peer-2-peer interprofessional module (P2PM) piloted in the P1 year of our accelerated PharmD program. We share achievement of 3 objectives: 1) enhancing the learning environment, 2) incorporating interdisciplinary approaches to pharmacology, and 3) creating a platform for exchange of ideas between pharmacy and audiology students. **Method:** Under the guidance of pharmacy faculty, a peer-2-peer learning activity, based on a presentation and discussion format, was developed by 3, third-year students of the School of Audiology. The College of Health Professions at Pacific University Oregon hosts 8 professional schools, facilitating interprofessional curricular development.
The student led activity was aimed at pharmacy students in the P1 year and correlated the anatomy and physiology of the ear to mechanistic ototoxicity of diuretic agents. Pharmacology of diuretics is included in the P1 curriculum. Emphasis was placed on learner interaction by incentivizing questions from pharmacy students. Comprehension and retention was assessed by means of a quiz administered through ExamSoft. A survey instrument gathered qualitative learner perception-based data. Results: 78% respondents reported positive effect on retention. In e-mails, many students expressed enjoying learning pharmacology in this new format. A majority of students opined that the activity should be repeated for the in-coming P1 class, and that similar activities should be included in the curriculum. Implications: The P2PM project provided a platform for exchange of ideas between Audiology and Pharmacy students to enable learning interdisciplinary approaches to medical issues.

Clinical Application of a Basic Science Principle: From Starling Forces to Nephrotic Syndrome. Jennifer L. Mathews, St. John Fisher College, David J. Hutchinson, St. John Fisher College. Objectives: Students often remark that basic science concepts are not clinically relevant. The primary objective of this study was to deliver an exercise related to the clinical application of hydrostatic and oncotic pressures (starling forces). Perceived benefit of the exercise and exam performance were assessed. Method: A clinical case of nephrotic syndrome was utilized to reinforce principles of Starling forces with P2 students in a Pharmacology course. Prior to delivery of the case study in class, students completed a 5 question pre-assessment based on reading materials. Once in class, students worked in small groups to answer a series of case-based questions. A member of the pharmacy practice department came to the Pharmacology class and reviewed the concepts which had been introduced and offered his clinical experience with the patient. Results: 100% of students strongly agreed or agreed with the questions: I found the case useful in my understanding of pressures and that it was beneficial to have concepts reinforced by the patient case. Survey questions used a Likert Scale (4 = SA; 1 = SD) with students reporting the benefit of having faculty from both departments working together (3.84/4.0; n = 51) and that they would like more exercises like this (3.80/4.0; n = 51). Student exam scores on virtually identical essays related to nephrotic syndrome increased in 2014 (83%; n=81) compared to 2013 (69%; n = 79). Implications: Students perceive a benefit of having science and practice faculty working together to address concepts. Exam scores demonstrate that the clinical application reinforces student learning.

Current Status of Instruction in Biological Science Courses within US Pharmacy Programs. Erika L. Vuernick, Western New England University, Lauren A. O’Donnell, Duquesne University, Shannon R. Kinney, Western New England University, Gary E. DeLander, Oregon State University, Christopher M. Hakala, Quinnipiac University, Daniel R. Kennedy, Western New England University. Objectives: The Biological Sciences Section created a Taskforce to analyze the trends of content delivery methods used by our members within their courses. Method: A 15 question online survey distributed to the biological sciences section. There were 218 respondents out of approximately 500 teaching faculty. Pearson Correlations were determined using SPSS software to the 0.01 level. Results: Almost 80% of respondents spend the majority of their time lecturing in the classroom. Discussion based (8%) and team based learning (7%) were the most common non-lecture teaching strategies identified. Interestingly, only 15% of respondents indicated that they preferred lecture-based teaching with discussion-based instructional delivery (35%) seemingly the most commonly preferred method, followed by team based learning and problem based learning (13% each), case based learning (11%), and flipped-classrooms (10%). There was a significant correlation between the higher the rank of the professor and the use of active learning (-.174). The amount of material needed to be covered (59%) balancing teaching with research and service (42%) and class sizes (39%) were the most common hindrances to using active learning methods cited by respondents. Implications: The percentage of instructors who primarily lecture (80%) as compared to those who wish they were lecturing (15%) is striking. There is a wide-spread interest in employing active learning techniques in pharmacy curricula. An unmet need exists for identifying and minimizing impediments to the incorporation such techniques in the classroom.

Current Status of Physiology Education in the US PharmD Programs. Mohammed A. Islam, West Coast University, Rahmat M. Talukder, The University of Texas at Tyler. Objectives: Physiology is one of the basic science components in the PharmD program which is foundational for the understanding of human disease and drug therapies. The purpose of this study is to determine the current status of physiology education and its depth and breadth in US pharmacy programs. Method: A survey instrument was developed and distributed through SurveyMonkey to the AACP Pharmacology/Biological Science members of 132 PharmD programs. Survey items focused on soliciting qualitative and quantitative information on the delivery of physiology contents and faculty perceptions of physiology education. Descriptive statistics was used for data analysis. Results: With 113 programs responded to the survey, the response rate was at 86%. Out of 113 schools/Colleges, 49 programs (43%) offer stand-alone physiology courses. Sixty four programs (57%) offer physiology integrated with other courses such as anatomy (n = 9), pathophysiology (n = 29), pharmacology (n = 10), and organ-based modules comprising of medicinal chemistry, pharmacology, and therapeutics (n = 16). When integrated, the average contact hours for physiology contents significantly reduced compared with stand-alone courses (30 hours versus 83 hours, p < 0.001). Eighty percent of the responding faculty (n = 204) agree/strongly agree that physiology is underemphasized in PharmD curriculum. Sixty seven percent of the respondents agreed/strongly agreed that physiology should be taught as a stand-alone foundational course. Implications: The physiology contents in the curriculum must be of adequate depth and scope to provide the foundation for the clinical objectives of the PharmD program. Basic science and clinical faculty need to work together to ensure that physiology contents are balanced and not underemphasized in the integrated curriculum.

Development and Assessment of a Patient Level Diabetes Education Elective for First Year Pharmacy Students. Dean Reardon, University of Charleston, Lindsay Acree, University of Charleston, Stephen J. Cook, University of Charleston, Marea Dodd, University of Charleston, David A. Latif, University of Charleston, Aladin A. Siddig, University of Charleston. Objectives: This innovative course utilizes, in part, the Diabetes Empowerment Education Program protocol to enable pharmacy students to teach and develop the requisite skills needed to help patients better understand and manage their diabetes. Method: Diabetes Education and the Patient is a three-credit hour elective course that is open to first year PharmD students. The program is structured into eight learning modules which address the AACE-7 self-care behaviors. In addition to mastering the modules, students are required to attend two health care events, where they utilize their newly acquired skills and knowledge to provide patient screenings and education on diabetes along with the associated risk factors. Results: Course assessment utilizes student evaluations, oral and written assignment rubrics, reflections and informal verbal
feedback. Students were given patient level pre- and post-education training tests. The average score on the pre-test was a 67.5% while the average post-test score was 91.8%. Analysis of pretest data identified the strongest knowledge area in diabetic pathophysiology (75%) while diabetes diagnostic testing methodologies were weakest (40%). Scoring ranged from a low of 86% to a high of 97% across all question categories on the post-education training test. **Implications:** This course provides students with a basic ability to counsel patients on diabetes and lifestyle changes during their early experiential education rotations, rather than waiting for the topic to be formally taught in the third year pharmacotherapeutics course. Students gain an understanding of practical patient diabetes education and self-management techniques, making this an indispensable tool and professional reference for student pharmacists.

**Evaluate to Learn: Integrating Assessment Data to Improve Outcome of a Didactic Biomedical Science Course.** Paramita Basu, Touro College of Pharmacy-New York, John Fisher, Touro College of Pharmacy-New York, Batoul Sennaji-Tomza, Touro College of Pharmacy-New York, Suzanne Soliman, Touro College of Pharmacy-New York. **Objectives:** To describe the evaluation system used to identify curricular issues within a pre-clinical biomedical science course in a Pharm.D program and report the difference in outcome after implementation of the resulting changes. **Method:** Course content, sequence of delivery and integration of topics with other courses in the relevant tracks were reviewed to identify discrepancies. Evaluation feedback from students and faculty were obtained from E-value online course evaluation system, and end of course discussion reports. Student performance in the course before and after implementing the recommended changes were compared to assess their effectiveness. **Results:** Content duplications and discord in the delivery sequence were identified within the course and corrected accordingly. Infectious disease content was also added in the form of interactive group cases. The information obtained from evaluations by students and faculty were compiled as a list of recommendations communicated to the course coordinator, as guidelines to alter the structure and content of the course. The overall class average earned by students enrolled in the course increased by 12% and the mean score obtained for course effectiveness in the E-value course evaluation tool improved by 0.5 points (in a scale of 1 to 5) after changes. **Implications:** The data indicates a probable improvement in student learning as a result of the assessment driven course changes. But the student performance comparison data are restricted to 2 cohorts which limits the reliability of the results thus requiring further investigation.

**Evaluating Student Perceptions of Group-Based Learning in the First Year of Pharmacy School.** Lila P. LaGrange, University of the Incarnate Word, Marcos Oliveira, University of the Incarnate Word, Adeola O. Coker, University of the Incarnate Word. **Objectives:** The objectives were to develop student groups by implementing a process that considered student performance and personality, evaluate student perception of group effectiveness, and identify activities that students perceived to work best for their learning. **Method:** A process for creating student groups was developed by balancing different personalities (True Colors Test) with student ability based on pre-pharmacy GPA. This was implemented across three different courses (Biochemistry, Anatomy & Physiology, and Pharmaceutics) in the beginning of fall 2014. Self- and peer-assessments were completed midway and at semester end. A survey was conducted to assess student perceptions after the fall semester. IRB approval was obtained. **Results:** Eighty of 93 students completed the study. The majority of students indicated they were already familiar with group activity (55%). Most (90%) students felt that assigned group activities worked well and a majority felt that self- and peer-assessment improved their learning (84%) and group effectiveness (90%). A variety of group-based activities were implemented across the three courses, including daily quizzes, case studies, clicker questions, concept mapping, and group exams. Approximately 90% or more of students felt these activities were effective for their learning, with group exams having the highest perceived benefit (99%). However, the majority preferred traditional lecture (68%) over group-based learning. Class preference for group (52%) versus individual (48%) activity was divided. **Implications:** The group design process and activities were effective for student learning although the majority of students preferred traditional lecture. This supports the importance of incorporating diverse learning activities in the classroom.

**Exploring the Role of Protein Disulfide Isomerase Inhibition in the Health Benefits of Super Foods.** Christine N. Galinski, Western New England University, Megan A. Ooms, Western New England University, Kayleigh D. Mitchell, Western New England University, Daniel R. Kennedy, Western New England University. **Objectives:** To determine whether inhibition of protein disulfide isomerase (PDI), an enzyme implicated in the progression of many diseases, including heart attacks, strokes, HIV, cancer and diabetes, contributes to the health benefits of consuming fruits and other plant-based foods. **Method:** A total of 40 foods were purchased as freeze-dried powders and resuspended in a 50/50 mixture of water and DMSO at 10 mg/mL. Activity was examined by determining their inhibition of PDI activity in an insulin turbidimetric assay. Positive inhibitors were confirmed in a fluorescence based peptide assay and subsequently examined for their ability to inhibit PDI related thiol isomerases. **Results:** Of the 40 super foods tested, 25/40 demonstrated at least moderate PDI inhibitory activity at concentrations of 1mg/mL. The strongest inhibitors include green tea, grape, pomegranate and acai berry (≥100 μg/mL). However, other popular supplements including blueberry, yumberry, ginger, and papaya failed to inhibit the enzyme at levels over 1 mg/mL. Interestingly, most positive inhibitors were not selective for PDI, displaying inhibition toward PDI related thiol isomerases ERp5 and ERp57. **Implications:** Many popular super foods inhibit PDI, providing mechanistic support to a variety of the known health benefits of these foods. Consumption of PDI inhibiting compounds may contribute to the prevention of aberrant thrombus and fibrin formation as previous studies have found 2-3 glasses of grape juice contains enough bioactive compounds to inhibit thrombus formation. Consumption of such foods may also delay the progression of neurodegenerative disorders and some cancers, as well as decrease the risk of developing diabetes.

**Identification of Up-regulated Genes in Invasive Breast Tumors with FGD1 Expression.** Christopher L. Farrell, Presbyterian College, Nancy G. Pedigo, Presbyterian College, Lynne J. O’Donoghue, Scott T. Bagwell. **Objectives:** To evaluate how the activity of FGD1 leads to the upregulation of cancer genes that can cause an invasive phenotype in breast tumor cells. **Method:** FGD1 gene was analyzed for sequence and copy number in primary breast tumors of human cancer patients. These tests were used to correlate rare genetic variants with patients who had invasive breast tumors. To evaluate the importance of FGD1 in breast cancer cells, a RNA microarray was used to determine the change in FGD1 expression. Following the knockdown with the shRNAs in a breast cancer cell line that constitutively expresses FGD1, MDA-MB-231, the FGD1 knockdown and control cells were compared for differences in expression. **Results:** There were two silent polymorphisms identified in approximately 40% of the tumors...
samples and a rare missense polymorphism in a patient with a cancer recurrence. Amplification of FGDI1 gene was found in 4 breast tumors. Increased copy number of the FGDI1 gene suggests that the Fgd1 protein is overexpressed in some tumors. The microarray data identified a gene expression signature of potential genes that may be important for advance tumor development. In particular, the MPP7gene, a potential cancer-associated gene, was down-regulated in the FGDI1 knockdown cells. **Implications:** The importance of identifying the genetic variants and gene signature potentially has the translational capability to provide an approach for early detection and potential alternative targeted treatments for patients with invasive breast tumors.

**Impact of Thiosemicarbazones on the Activity of Topoisomerase IIa.** James T. Wilson, Lipscomb University; Bradley C. McGill, Tennessee Technological University; Edward C. Lisić, Tennessee Technological University; Joseph E. Dewees, Lipscomb University. **Objectives:** Type II DNA topoisomerases resolve topological knots and tangles in DNA that result from routine cellular processes and are effective targets for anticancer therapeutics. To this end, thiosemicarbazones have been identified as having the ability to kill cancer cells from several cell lines. A published report suggests this activity can be attributed to action against topoisomerase II. Therefore, we set out to analyze the activity of a series of thiosemicarbazone compounds against topoisomerase II. **Method:** Two thiosemicarbazones, acetylpyrazine-methylthiosemicarbazone (APZ-MTSC) and acetylpyridine-ethylthiosemicarbazone (APY-ETSC), and their copper(II) complexes [Cu(APZ-MTSC)Cl] and [Cu(APY-ETSC)Cl] have been synthesized and were examined in a series of in vitro assays with purified human topoisomerase IIa. **Results:** Reactions in the presence of [Cu(APZ-MTSC)Cl] and [Cu(APY-ETSC)Cl] displayed the highest levels of DNA cleavage and also inhibited DNA relaxation. Further, these compounds also displayed characteristics consistent with covalent poisons: crosslinking of enzyme dimers, inactivation of DNA cleavage, and sensitivity to a reducing agent (dithiothreitol). In contrast to traditional topoisomerase II poisons, these compounds did not inhibit ligation. Interestingly, [Cu(APY-ETSC)Cl] displayed the ability to increase the rate of DNA cleavage beyond what was seen with etoposide or [Cu(APZ-MTSC)Cl]. Additionally, [Cu(APY-ETSC)Cl] inhibited ATPase function of topoisomerase II. **Implications:** Both [Cu(APZ-MTSC)Cl] and [Cu(APY-ETSC)Cl] impact the function of topoisomerase II by apparently acting as catalytic inhibitors rather than poisons. While further work is needed to clarify the impact on DNA cleavage as it relates to ATPase function, these compounds are clearly promising prospects for targeting topoisomerase II therapeutically.

**Influence of Genetics/Pharmacogenomics Education on Pharmacy Student Knowledge and Perception.** Meaghan H. Paris, Shannon R. Kinney, Western New England University. **Objectives:** Pharmacogenomics is a growing field that allows for individualized pharmacotherapy and improved outcomes. The current study was conducted to determine the influence of genetics/pharmacogenomics education on student knowledge and perception of its clinical importance. **Method:** An online survey was distributed to PY1 students during the first and last weeks of the required Genetics/Pharmacogenomics course in spring 2014. Pre and post data was matched using a unique code for each participant, and analyzed using Prism Graphpad. **Results:** A total of 63 (84%) responses were matched from pre-survey to post-survey. Respondents had minimal genetics coursework prior to enrollment, yet the majority agreed in both surveys that pharmacogenomics is relevant (>96.8%) and can improve patient care (>96.8%). Post-survey data indicated that more students agree that it is their responsibility to answer patient questions (p=0.029) and provide therapeutic recommendations (p=0.004) related to pharmacogenomics. Furthermore, students were more comfortable interpreting genetic information (p<0.0001) and applying this to drug selection (p<0.0001). **Implications:** The data suggest that the Genetics/Pharmacogenomics course helped students to understand their role in interpreting and applying genetic information to therapy management. Although there was a significant increase in respondents who felt comfortable applying genetic information after the course, 17% still were not confident in this area. In response, additional time was allotted during the 2015 course for the application of genetic information to therapy. The study is being conducted with the current class in order to determine the effectiveness of the change. Our results support the inclusion of genetics/pharmacogenomics education in doctorate of pharmacy curricula nationwide.

**Pharmacy Admissions Blog’s Influence on Student Application and Matriculation Decisions.** Michelle L. Herdman, University of Charleston; Susan M. Gardner, University of Charleston. **Objectives:** To investigate how a pharmacy admissions blog influences students’ decisions to apply and matriculate to pharmacy school. **Method:** P1 students and pharmacy school candidates were surveyed to determine if the school’s admissions blog influenced their decisions to apply and/or matriculate. Class of 2018 students (n=75) were surveyed during their orientation course in August 2014. Class of 2019 candidates (n=114) were surveyed during interview days held September 2014 to January 2015. Surveys were administered through the Qualtrics electronic platform. **Results:** Students from both groups agreed or strongly agreed that blog information influenced their decisions to apply to the school (2018 = 28%; 2019 = 34%). Thirty-three percent of the Class of 2018 indicated that the blog influenced their decision to matriculate. Respondents from both groups indicated that general admissions information and posts about student life were the most helpful topics, along with specific information about the application process. Students from both groups (2018 = 31%; 2019 = 28%) most often discovered the blog through the school’s homepage (website). The second most popular way students discovered the blog was through school recruiting events (2018 = 17%; 2019 = 22%). Other students found the blog through the school’s social media sites and internet searches. **Implications:** This study indicates that a blog focused on pharmacy admissions and recruitment can influence student decision-making regarding school choice and matriculation. As competition increases for pharmacy school admissions, an admissions blog can be a tool used to enhance and impact recruitment.

**Student Knowledge Retention of Biomedical Sciences (Immunology).** Manas Mandal, Roseman University of Health Sciences; Venkata K. Yellepeddi, Roseman University of Health Sciences. **Objectives:** To determine students’ retention of biomedical sciences knowledge in immunology and comparatively analyze campus-specific knowledge retention. **Method:** To determine retention of immunology concepts learned in P1 year, a ten question unannounced quiz was given to the P2 students of both campuses prior to beginning of P2 clinical immunology course. A survey was administered to the students to understand the impact of retention of P1 basic immunology on P2 clinical immunology after completion of P2 course. **Results:** Only 6% of the students scored at 100% level, 39% scored between 70-90% and vast majority (53%) scored between 30-60% level in the quiz. Topic specific variance in retention of immunology knowledge and concepts was observed with macrophage function at 83%, MOA of Rituximab at 64% and cyclosporine at 52%. Students retained knowledge on immunization at 73%, autoimmunity at 51% and anaphylaxis-treatment at the highest level at 89%. Campus-specific knowledge
Method: The study is to investigate if menthol/cigarette smoke treated lung cancer is the leading cause of death and is the most common type of diagnosed cancer in the U.S. according to the National Cancer Institute. 

Implications: Our results demonstrate that retention of biomedical science information and concepts in immunology significantly varies between students and campuses in a large class over an 8-10 month period.

The Effects of Smoke and Menthol on Gene Expression in Human Alveolar Adenocarcinomic (A549) Cells. Emily R. Esposito, Sallivan University, Viet Nguyen, Sharlonda Nunn. Objectives: Lung cancer is the leading cause of death and is the most common type of diagnosed cancer in the U.S. according to the National Cancer Institute. The majority of the cases are attributed to cigarette smoke. Mentholated cigarettes are currently under scrutiny. The goal of this study is to investigate if menthol/cigarette smoke treated lung cancer cells reveal gene expression changes that would predispose a patient to lung cancer. Method: A549 lung cancer cells were plated, treated, harvested, and isolated for RNA. RT-PCR profiler arrays were used to determine changes in gene expression. The following conditions were used: A549 cells with DMSO (vehicle control), A549 cells with cigarette smoke condensate (CSC), A549 cells with Menthol, and A549 cells with CSC + Menthol. Results: CSC concentrations up regulated gene expression in the following functional gene categories: apoptosis, metabolism, epithelial-mesenchymal, DNA damage and repair, cell senescence, cell cycle, angiogenesis, and hypoxia functional gene groups. Specifically, gene F3-SERPINB2 yielded a 11-fold increase in expression. Based on calculated fold changes, this suggests that CSC caused an up regulation of functional genes involving the development of cancer. Implications: More studies are needed to explore this area of research. However this data suggests that cigarette smoke does induce changes at the RNA level. In this future, this might provide gene-targeted therapy to help with lung cancer.

Utilization of a Learning Management System for the Provision of Faculty Development. Teresa M. Seefeldt, South Dakota State University, Jane R. Mort, South Dakota State University. Objectives: The provision of faculty development is a required component of the accreditation standards. Participation can be complicated by faculty located in multiple sites. Online delivery can be a convenient method of providing faculty development opportunities. The objective of this project was to evaluate the utilization of a course management system for online faculty development. Method: A faculty development course was developed in the university’s learning management system (Desire2Learn) in 2013, and all faculty in the College of Pharmacy were enrolled. The faculty development activities were offered using synchronous and asynchronous methods. A virtual classroom was utilized for online synchronous faculty development sessions, and the sessions were recorded for later viewing by faculty. The course contained 17 recorded videos and 11 documents on a variety of teaching and learning topics. Utilization data was extracted from the learning management system. Results: Most of the faculty (82%) accessed at least one element (webinar, video, document) in the faculty development course. The highest level of participation (24-66% of faculty) was seen with live webinars delivered using the virtual classroom. In these webinars, a difference in participation was noted between pharmacy practice (range 24-72%) and pharmaceutical sciences faculty (range of 22-44%). Access to recorded sessions and other development resources has ranged from one to six views per item. Implications: A high level of faculty participation was observed in the online faculty development course. Methods to increase involvement by faculty members from all disciplines should be further explored.

CHEMISTRY

Completed Research

A Case for Using Test-enhanced Learning in Pharmacy Education. Savannah Horn, Appalachian College of Pharmacy, Marcy Herrick, Appalachian College of Pharmacy. Objectives: To determine if test-enhanced learning can be used to improve student performance on examinations and facilitate knowledge retention of pharmacy students in a 3 year Pharm.D program. Method: Optional online active learning modules for 19 topics in various P1 courses (Biochemistry, Medicinal Chemistry, Pharmacology, Immunology) over a one-year period for two classes of students (n = 69-75) were created using a test-enhanced learning approach. Each module contained 18-65 questions with multiple formats (e.g., multiple choice, select all that apply, matching) and provided immediate feedback to students. A subset of module questions were modified (e.g., change question type, distractor) and included on formal assessments (i.e., quizzes, examinations). Results: The majority of students (82-100%) utilized the modules prior to formal assessments, and performance on module questions improved with repeated attempts (range: 11-38% across all module topics). The combined results from these courses indicate that students without access to modules performed better on quiz questions related to module topics (79.9%) than students with access to modules (72.4%). However, this combined average decreased to 71.7% on exam questions. In contrast, the combined average on exam questions increased to 81.9% for students with access to modules. Analysis of student responses suggests that the observed effect is attributed to improved understanding of the material rather than simple memorization of module questions. Implications: Test-enhanced learning is a valuable tool that promotes good study habits in students, and can be used in pharmacy education as a means to improve student understanding of material and promote knowledge retention.

Development of a Mobile Application as a Supplemental Learning Tool for Pharmaceutical Biochemistry Courses. Melany P. Puglisi-Weening, Chicago State University, Michael Nolan, Chicago State University, Tatjana Petrova, Chicago State University, Tauseef Salim, Chicago State University, Anna Ratka, Chicago State University. Objectives: The objectives of this study were to (1) assess the perceived level of difficulty of biochemistry topics taught in the Pharm.D program and, (2) assess the student perceptions of and preferences for learning methods to reinforce course material. Results will be used to develop a learning tool application for mobile platforms (e.g., Apple iOS or Google Android). Method: A 32 question instrument using the Likert scale (1 = least difficult to 5 = most difficult) was administered to 250 professional students who have completed the course. Questions were divided into two categories: first, asked respondents to rate the level of difficulty of the topics taught in the course, and second, asked them to choose methods for reinforcing concepts presented in the lecture. Validity was assured by formal feedback from two biochemistry professors and extensive literature review. Descriptive statistics were performed with PASW (Predictive Analytic SoftWare) version 18.0. Results: The response rate was 75.2%. Protein structure and non-covalent bonding were rated as least difficult topics while carbohydrates, glycolysis, cell signaling, RNA, DNA and biotechnology were rated as most difficult topics. Test/quizzes and flash animation
were chosen most frequently than 3d models, flash cards and key definitions as desired study tools. **Implications:** The results demonstrate that the mobile platform application should incorporate test/quizzes and flash animation to assist student pharmacists with understanding and retention of the difficult topics in the pharmaceutical biochemistry course.

**Expansion of US Pharmacy Schools: Are We Compromising Quality for Quantity?** David J. Weldon, Loma Linda University, Elvin A. Hernandez, Loma Linda University, Rashid Mosavin, Loma Linda University. **Objectives:** The objective of the study is to measure the pharmacy faculty perception on how rapid expansion of pharmacy schools has impacted the prospective student quality. **Method:** We designed a online, self-administered, ten-minute anonymous pilot survey with Qualtrics at the 2014 AACP National Meeting. Frequency and chi-square analyses were completed in SPSS (Version 23) with significance levels set at 0.05. **Results:** The cohort consisted of 122 respondents comprised of 51.6% clinical faculty, 27.8% basic/pharmaceutical science faculty, and 20.6% social/administrative faculty. Regarding the overall perception of pharmacy school growth, a majority (59.9%) believe the growth is unhealthy, 13.1% believe the growth is healthy, while 27.0% remain neutral. When the issue of overall quality of perspective students for admission in the 2013-14 cycle was assessed, a large majority (72.1%) believes that rapid growth has had a negative effect on quality. **Implications:** Pharmacy school expansion in the US may result in admission of students less prepared scientifically to enter the professional pharmacy program today as compared to the past two decades. These faculty perceptions imply that one of the consequences of rapid growth is sacrificing quality to meet quantitative metrics. This unintended outcome may result in pharmacy graduates entering the healthcare force who are less prepared to deliver pharmaceutical care and function as competent members of the healthcare team.

**Social Media Utilization and Policy in Pharmacy Education.** David J. Weldon, Loma Linda University, Elvin A. Hernandez, Loma Linda University, Jeff J. Cain, University of Kentucky. **Objectives:** The objective of the research project was to elucidate the utilization and policy knowledge of social media in pharmacy education. **Method:** We conducted a online, anonymous cohort survey consisting of 17 questions among pharmacy students from seven pharmacy schools categorized as either public or private, religious. **Results:** Overall, 224 (51.0%) of the 439 students completing the survey believe that social media can add value in their professional courses. However, only 107 (24.4%) believe that social media should be a part of their professional courses. The issue of personal information security revealed that 270 of 406 students (66.5%) responded that they feel secure. With regards to the understanding of social media policy in pharmacy education, a majority (59.9%) believe the growth is unhealthy, 13.1% believe the growth is healthy, while 27.0% remain neutral. When the issue of overall quality of perspective students for admission in the 2013-14 cycle was assessed, a large majority (72.1%) believes that rapid growth has had a negative effect on quality. **Implications:** Pharmacy school expansion in the US may result in admission of students less prepared scientifically to enter the professional pharmacy program today as compared to the past two decades. These faculty perceptions imply that one of the consequences of rapid growth is sacrificing quality to meet quantitative metrics. This unintended outcome may result in pharmacy graduates entering the healthcare force who are less prepared to deliver pharmaceutical care and function as competent members of the healthcare team.

**Structure Activity Relationship of Novel Piperazino Enaminones as Potential Anti-inflammatory Agents.** Ola A. Ghoneim, University of Saint Joseph, Jyothi Dhuguru, Doreen E. Soldato, University of Saint Joseph, Ivan O. Edafiogho, University of Saint Joseph. **Objectives:** Chronic airway inflammation of asthma is characterized by mast cell and eosinophil infiltration and activation, driven by cytokines and chemokines. Chemokines and several cytokines, including TNF-alpha are known to be involved in the pathogenesis of asthma. Therefore, compounds that inhibit the production of cytokines and/or chemokine receptors display anti-inflammatory effects and could be potential anti-asthmatic agents. Previously, the enaminone series was synthesized in our lab. Among this series, E121 exhibits promising anti-inflammatory activity by inhibiting LPS-induced release of TNF-alpha cytokine from murine macrophages by 72% at the 50 microgram/mL concentration. Meanwhile, N-aryl-piperazine has been recently documented to be an important motif in a series of human CCR2 chemokine receptor antagonists. The objective of the research project was to incorporate N-aryl-piperazine into the enaminone pharmacophore and examine the structure activity relationship of this novel series of piperazino-enaminones. **Method:** Synthesis of the piperazino-enaminones started by condensing N-methyl-piperazine with the corresponding nitro halobenzenes followed by reduction using polymethylhydro-silane. Coupling of the in-house arylpiperazines to the beta diketone intermediate yielded the desired piperazino-enaminones in 60-80% yield. **Results:** Six novel piperazino-enaminones (JODI) series were successfully synthesized. Chemical structures were fully characterized by spectral (NMR and HRMS) analyses. The effect of the chemical structures of the JODI series on the anti-inflammatory activity on E121 will be presented. **Implications:** With the significant interest in the development of anti-inflammatory drugs that antagonize the function of chemokines or their receptors, piperazino-enaminones provide a novel approach towards potential anti-asthmatic agents with dual activity; cytokine inhibition and chemokine receptor antagonism.

**Structure-Based Design of Inhibitors of the Mcl-1 Oncoprotein.** Maryanna E. Lanning, Wenbo Yu, Lijia Chen, University of Maryland, Jamal Chauhan, University of Maryland, Alexander D. MacKerell, Jr., University of Maryland, Paul T. Wilder, University of Maryland, Steven Fletcher, University of Maryland. **Objectives:** To inhibit the Mcl-1 oncoprotein with small-molecules. **Method:** The Bcl-2 family of proteins contains both pro- (e.g. Bak, Bax and Bim) and anti-apoptotic (e.g. Bcl-2, Bcl-xL and Mcl-1) members whose reciprocal antagonism maintains a healthy population of cells. In many cancers, the anti-apoptotic Bcl-2 proteins are upregulated, which results in the arrest of programmed cell death. In particular, Mcl-1 is overexpressed in acute myeloid leukemia (AML), for which there currently exists no targeted therapy. Over-expression of Mcl-1, as with the other anti-apoptotic proteins, manifests itself as tumor development and progression by capturing the BH3 α-helical “death” domains of the pro-apoptotic proteins through a hydrophobic BH3-binding crevice on the surface of Mcl-1. This renders the pro-apoptotic proteins incapable of homodimerization, a critical event in the apoptosis pathway. **Results:** Using structure-based drug design, we designed novel small-molecules based on a 1-hydroxy-2-naphthoic acid scaffold to recognize the BH3-binding groove on the surface of Mcl-1. A fluorescence polarization competition assay revealed that compounds effectively competed with the BH3 α-helical peptide of Bak. Our most potent compound inhibited Mcl-1 with a Ki = 31 nM. 15N HSQC NMR spectra with 15N-Mcl-1 provided further confirmation that our compounds directly bind the BH3-binding groove on the surface of Mcl-1.
The synthetic ligand ABT-263 is undergoing clinical trials for various cancers due to its ability to inhibit Bcl-xL, but it only poorly binds Mcl-1 and so Mcl-1 upregulation leads to resistance. Combination therapy of ABT-263 with our Mcl-1 inhibitors might provide a new chemotherapy regimen for AML.

Student Pharmacists' Knowledge and Self-efficacy Levels in Recommending Commonly Used Over-the-Counter Vitamin Supplements. Robin M. Zavod, Midwestern University/Downers Grove, Christina Bonanno, Ana C. Quimones-Boex, Midwestern University/Downers Grove. Objectives: This study looks to measure the progression of student knowledge acquisition and self-efficacy as it specifically relates to Vitamins A, D, and K and the mineral calcium. Method: A pre/post survey methodology was used to assess the knowledge and self-efficacy levels of pharmacy students as they progress in the elective course. Knowledge and self-efficacy items were developed, as well as items to collect demographic information (age, sex, race). Both general knowledge questions, as well as questions that required more analysis, synthesis, and evaluation skills were utilized. The study population, which represents the pilot for this project, was comprised of thirty-nine Midwestern University Chicago College of Pharmacy Class of 2014 students who were enrolled in a Vitamins, Minerals, and Nutritional Support elective course in Fall 2012. Results: Evaluation of the knowledge-based questions demonstrates a general improvement from the pre- to post-selective surveys. The greatest increase in knowledge occurred for Vitamin A. The self-efficacy portion of the instrument indicated mixed results, with both increases and decreases evident. Several environmental influences may have played a role in our self-efficacy measurement efforts. Implications: The results of this study was used as a measure of course effectiveness and served as the pilot study for a longitudinal study that evaluates how well the current PharmD curriculum prepares student pharmacists to counsel patients as it relates to vitamins A, D, and K and the mineral calcium in their future practice of pharmacy.

Synthesis and Evaluation of Imidooxy Compounds as Potential Anticancer Agents. Ivan O. Edafiogho, University of Saint Joseph, Ola A. Ghoneim, University of Saint Joseph, Mark A. Sweezy, University of Saint Joseph, Harry R. Howard, Medisystems LLC. Objectives: Cancer is an uncontrolled growth of tissue, or blood cells in the body, and it can metastasize and invade other tissues causing death in some patients. Many anticancer agents cause serious toxicities such as nephrotoxicity, cardiotoxicity, and neurotoxicity. Therefore, it is necessary to develop safer anticancer agents. The objectives of the research projects were to synthesize and evaluate imidooxy compounds for anticancer activity in vitro in a variety of cancer cell lines. Method: The reaction between N-hydroxy imides and halogenated carboxylates provided the imidooxy compounds which were evaluated in vitro by the National Cancer Institute in Bethesda, Maryland. The starting hydroxy imides included N-hydroxysuccinimide, N-hydroxyphthalimide, and N-hydroxynaphthalimide; while the halogenated carboxylates included methyl bromoacetate, ethyl bromoacetate, and methyl bromoacrylate. The imidooxy compounds were fully characterized by spectral and elemental analyses. Results: Several imidooxy compounds showed anticancer activity against many cancer cell lines. The most potent compound was methyl N-phthalimidooxy-2-methylacrylate (E49). It had anticancer activity against eight different cancer cell lines. Anticancer activity was observed at 10 to 100 micromolar concentrations against lung, colon, central nervous system, melanoma, ovarian, prostate, renal, and breast cancer cell lines. It was most potent against prostate cancer cell lines. Implications: The imidooxy compounds offer a new series of compounds with potential anticancer activity against different types of cancer.

The Use of Interleaving to Enhance Student Learning and Knowledge Retention in a Blocked Curriculum. Marcy Herneck, Appalachian College of Pharmacy. Objectives: To determine if interleaving can be used to enhance student learning and knowledge retention by pharmacy students in a modified blocked curriculum. Method: Daily active learning activities and weekly problem sets were developed for 10 topics in a Clinical Pharmacokinetics course. Assignments required students (n = 69) to answer questions on new and old material in a randomized order to create an interleaving effect. Twelve online modules contained 15-40 questions each with multiple formats (e.g., multiple choice, numerical) and provided immediate feedback to students, while problem sets and group active learning assignments contained 4-10 (multipart) questions with delayed feedback after grading. A subset of questions from assignments were modified and included on formal assessments (i.e., 2 quizzes, 2 examinations). Results: Overall a modest increase (2%) in student performance was observed for non-essay questions on Exam 2 compared to Exam 1, with increases observed for 7/9 topics. Twenty-two questions (18 non-essay, 4 essay) similar or identical to questions on Quiz/Exam 1 were included on Exam 2. For non-essay questions, there was a < 1% change in performance for non-calculation questions (4 total) and a 16.5% increase in performance on calculation questions (14 total) on Exam 2, while there was an average 8.6% increase in performance on Exam 2 for essay questions (due to increases on 2/4 questions). These results indicate that students were able to retain the material throughout the course. Implications: Interleaving can be used in pharmacy education as a means to enhance student learning and promote knowledge retention.

Virtual Screening for Potential Small Molecule Inhibitors of PknG: Molecular Target for Multidrug Resistant Tuberculosis. Ashok E. Philip, Union University. Objectives: To identify chemically diverse, selective, small molecule inhibitors of PknG with the potential to treat latent TB by employing a robust drug design and synthesis protocol. Method: 3D crystal structure of PknG analyzed for binding site requirements followed by Ligand-Based Virtual Screening employing SUREFLEX-DOCK suite in SYBYL and ranked based on SUREFLEX-DOCK scores. Results: 892 ligands identified from a 2D database of 5 million ligands. 892 ligands were then docked into PknG using Sureflex-DOCK module which generated multiple poses for each compound and assigned a total score for each pose based on similarity, polarity and other scoring parameters. The candidate ligands were categorized based on their chemical diversity. Ligands with desired hydrogen bonding interactions, high docking score and those bound in the pocket with minimal steric interactions were selected for commercial purchase and chemical synthesis. Implications: Despite availability of drugs to treat TB, current treatment options are rendered either ineffective or fail due to prolonged duration of treatment, cost of treatment, ineffective intracellular penetration of drugs, and the ability of Mtb to remain latent and be reactivated in immunocompromised patients. In this setting, our goal to inhibit PknG, a critical enzyme involved in Mtb survival, with chemically diverse small molecules makes a significant contribution to drug discovery efforts aimed at treating the latent form of TB.

Theoretical Models
Design and Implementation of an Online MS in Regulatory Science Degree Program for Working Professionals. James E. Polli, University of Maryland; Paul Shapiro, University of Maryland, Andrew Coop, University of Maryland. Objectives: Regulatory science is the science of developing new tools, standards, and approaches to assess
Continuing education (CE) programs meet pharmacists continuously increasing needs is open to question. Therefore, our objectives were to explore pharmacists’ perception and attitudes concerning their CE needs, and to evaluate factors that impact pharmacists’ choice and barriers to their participation in CE programming. Method: This investigation sampled pharmacists currently living in South Texas. A randomized sample of 700 pharmacists was selected from the database of licensed pharmacists maintained by Texas A&M Coastal Bend Health Education Center (CBHEC). A 16-question survey was developed and administered to pharmacists via mail. Questions were divided into specific domains of interest including pharmacist demographics, access to internet CE, frequency and characteristics of past CE activities, preferences for delivery and content, motivation to participation, and plans for future CE activities. Results: Of the 700 pharmacists who were sent surveys 162 completed and returned their surveys. Excluding the 75 undeliverable surveys our response rate was 26%. Investigation results indicated that 83.9% of respondents found that current CE programs met their needs. Interestingly, the top factors that impact pharmacists’ choice of CE was identical to the top barriers to CE: Cost of CE, travel/location to obtain CE, and quality/consistency of CE. Other results indicated that approximately 50% of sampled pharmacists preferred 2-hour CE programs, while the top CE choice was “appropriate use of contraception” with 70% participants interest. Implications: This investigation examined pharmacists’ perceptions regarding their CE needs, as well as factors and barriers that impact their CE programming choices.

Demystifying Pharmacists’ Perceptions of Palliative Care: An Innovative Tool for Educational Development. Ebtesam Ahmed, St. John’s University, Jenna Butner, Yale University School of Medicine, Samar Mansour, Faculty of Pharmacy, The German University in Cairo and Ain Shams University. Objectives: 1. To understand Egyptian pharmacists’ perceptions and understandings of PC and to educate about the care of cancer patients with PC needs. 2. To highlight the misconceptions and stigma associated with PC in the general community population of pharmacists. Method: 1. An educational symposium was developed to share the latest update of clinical knowledge in cancer and PC for pharmacist in Egypt. 2. A presentation entitled, “Optimal Oncology Care: What’s PC Got to do with it?” was presented at the symposium. 3. Five questions regarding PC were asked at the beginning of the presentation. Questions ranged from definitions of PC to who comprises the PC team. 4. Respondents used Turning Point technologies to answer these questions, pre and post-presentation. Data was collected and further evaluated. Results: Over 150 pharmacists participated in the symposium. Data collected indicated that prior to the presentation, there was a large discrepancy in what pharmacists’ general understanding of PC is. After the presentation response rates reached nearly 100% across all five questions. Additionally, subjective commentary offered from the pharmacists further proved the point of this symposium’s importance. Implications: The recent World Health Assembly’s legislative adoption of the PC resolution recommends that the Ministry of Education take steps to ensure that health professionals have the knowledge and skills to meet the PC needs of patient. As international organizations are promoting improved access to PC, it is equally important to recognize the role of the pharmacist in the PC setting. Development of more educational PC training programs for pharmacists is vital.

Continuing Professional Education

Assessment of Pharmacists’ Attitude, Behaviors, and Preferences Related to Continuing Pharmacy Education. Fadi M. Alkhateeb, Texas A&M Health Science Center, Sarah Alameddine, Nova Southeastern University, David A. Latif, University of Charleston, Rabaa Al-Rousan, Texas A&M Health Science Center, Nile M. Khanfar, Nova Southeastern University. Objectives: Whether the available

Dueling Professors: Integrated Education and Faculty Development through “Double Acts.” Andrew Coop, University of Maryland, Magaly Rodriguez de Bittner, University of Maryland. Objectives: Design and implementation of integrated science and clinical practice education through teams of faculty physically teaching together as a team. Method: Teams of faculty (one science and one clinical) were selected for “double acts”, where faculty from different disciplines were present and interacting in the classroom at the same time, discussing a topic that integrates science and clinical practice. Topics were chosen to cover the range of scientific principles, including medicinal chemistry, pharmaceutics, and pharmacokinetics. Results: Student evaluations showed agreement (3.36/4) that the course achieved the goal of educating students on the need to integrate science principles to solve common patient care issues. Students expressed concerns that the topics chosen did not follow a structured theme. There was also variability in the approach used by faculty to teach the concepts. Faculty expressed universal agreement that the double-acts fostered faculty development to create interdisciplinary teams. Implications: The approach of having two faculty present at the same time was received well by students and faculty as a method for integrated education and team-teaching. There was consensus that this approach of “dueling professors” should be incorporated as a standard part of all basic science courses. Based on faculty feedback it is clear this approach has led to a greater understanding and respect among faculty members from different disciplines.
and prevention of FASD. Our objective was to develop and evaluate an educational program to educate pharmacists, pharmacy students and health care professionals about FASD. **Method:** A unique 3-hour, evidenced-based FASD educational program was developed and presented by a team consisting of a pharmacist, physician and patient. A video modeling a pharmacist counseling patients about FASD and a pamphlet support practice. The program was evaluated using questionnaire measuring knowledge and awareness about FASD. **Results:** Approximately 70% of community pharmacists and 85% of pharmacy students were interested in playing a role in prevention of FASD but felt they would require more education. Pre-program, 4% of pharmacy students felt knowledgeable or very knowledgeable about FASD increasing to 60% post-program. Awareness of FASD increased from 25% to 73%. Only 27.7% correctly identified signs associated with FASD pre-program vs 71.4% post-program. Only 28.6% were comfortable or very comfortable discussing FASD with their patients pre-program compared to 60% post-program. **Implications:** A unique FASD educational program was developed and presented to pharmacy students and healthcare professionals providing increased knowledge and awareness of FASD as well as increased comfort in discussing FASD and prevention of FASD with their patients. The program is supported by a pamphlet and video. The program was adapted for multidisciplinary health care professionals and presented live and by webinar to ~2,000 national and international sites.

**Efficacy of Focus Group on Classroom Learning within an Accelerated Pharmacy School Curriculum.** Shaun E. Nolette, Roseman University of Health Sciences, Alyssa U. Nguyen, Roseman University of Health Sciences, Catherine Oswald, Roseman University of Health Sciences, Alana Whittaker, Roseman University of Health Sciences, Arup Chakraborty, Roseman University of Health Sciences. **Objectives:** To determine the impact of student based focus group within a pharmacy school setting to benefit facilitation of efficient two-way communication between students and a professor. Secondary outcomes include determining impact on classroom management and improvement of understanding materials. **Method:** 145 first year pharmacy students were divided into 6 groups; from each group a representative was selected to form the primary focus group. The group’s representative collected all the group’s questions and passed them on to the professor. The responses from the professor were then addressed back to the individual group or whole class as necessary. Paper surveys were administered by student researchers to all students following the conclusion of this focus group. The questions used the 10 point Likert Scale. The survey results were analyzed using descriptive statistics with the Statistical Package for the Social Sciences (SPSS). **Results:** Surveys showed that 93.3% of students found asking questions through the focus group made them more likely to ask questions for understanding. 95.5% of students found that utilizing the focus group for questions allowed for better understanding of difficult concepts. Open answer portion of the survey showed that most students found the focus group allowed them to ask questions more freely since they did not feel intimidated by asking in front of the whole class. **Implications:** An overwhelming positive result showed that focus groups could be an excellent additional approach to classroom questions and feedback management. The focus group offers an alternate pathway to improve student communication and understanding in larger lecture classroom environments.

**Influence of Reflection on Learning and Satisfaction in Participants of a Continuing Pharmacy Education Activity.** Kathleen A. McCartney, University of Colorado, Peter J. Rice, University of Colorado. **Objectives:** The purpose of this study was to examine whether CPE participants who reflect on their personal knowledge gap before a CPE activity will have improved learning and satisfaction. The first objective was to measure the participants’ acquisition of knowledge based on post-test results and taking action to gain more knowledge in the topic area after the program. The second objective was to measure the participants’ satisfaction with the activity. **Method:** We conducted a randomized controlled trial in a population of pharmacists attending two CE programs: an immunization program and a hypertension program. All participants took a 1-week pre-test on content, a 1-week post-test on content and satisfaction, and a 2-month post-program survey regarding actions taken to further knowledge in the content area. The intervention group completed a 4-question reflection questionnaire regarding baseline knowledge and relevance of topic with the pre-test. Minor deception was employed regarding purpose of the study. **Results:** 36 participants were enrolled; 33 participants completed the study. Pre-test scores, post-test scores and the paired difference between the scores were examined using PROC ANOVA and PROCGLM in the Statistical Analysis System (Cary,NC). No significant (p<0.05) differences were found between any of the measured parameters. **Implications:** Few interventional studies of reflection in CPE participants have been conducted. This study experienced low recruitment; the typical CE tests and satisfaction scales used lacked sensitivity and specificity to measure outcomes. Future studies could evaluate whether a structured reflection before a CPE program increases the likelihood of development and achievement of personal learning goals.

**New Post-Baccalaureate Doctor of Pharmacy Program Evaluation: The Student Experience at the University of Alberta.** Rene Breault, University of Alberta. **Objectives:** To describe the evaluation of a new post-baccalaureate PharmD program and student experiences with coursework and experiential rotations during the initial offering of the program. **Method:** Three focus groups were conducted with all 10 inaugural PharmD students after the first, third and final (fifth) experiential rotation. Focus groups explored students’ experience with coursework and how it supported initial rotation experiences, students’ ongoing experiences on rotations, and finally students’ experience in the program as a whole. Focus group interviews were audio taped and transcribed verbatim. Content analysis was conducted on the transcripts to identify recurrent themes using NVivo 10 software. **Results:** Students provided information on their experiences with workload, teaching methodologies, rotation selection process, and assessment methods. Common recurring themes included students’ increased confidence as they progressed through rotations, balancing their desire for increased independence, responsibility and accountability with preceptor guidance while on rotations, and preparedness for assuming responsibility for professional development throughout their careers. The opportunities for and value of mentorship and inter-professional collaboration were also highlighted. Finally, the program’s experiential learning midpoint and final assessment processes were viewed as cumbersome and somewhat inefficient. **Implications:** The rich qualitative data elicited through focus groups provided insight into the student experiences during the first year of this new program. Students had mostly positive feedback about the program overall, however, attention to student independence and assessment processes was identified. This student engagement with program evaluation in turn will contribute to quality improvement of the program.

**Pharmacist and Pharmacy Student Perceptions of a Competency-Based National Licensing Exam in Qatar.** Emily Black, Dalhousie University. **Objectives:** The College of Pharmacy at Qatar University partnered with the Supreme Council of Health in Qatar to pilot a competency-based final cumulative assessment as a model for
subsequent national licensing exams. The objective of this pilot study was to assess pharmacist and pharmacy student perceptions on applicability and need for a competency-based national licensing exam in Qatar.

**Method:** A qualitative study was undertaken using a series of 3 focus groups with practicing pharmacists (N = 11) and fourth year pharmacy students (N = 5) in Qatar. Focus groups were facilitated using an interview guide consisting of 9 open-ended questions. Discussions were recorded and transcribed verbatim. Results were analyzed using framework analysis. **Results:** Three major themes relating to implementation of a competency-based licensing exam were identified: i) value of the current knowledge-based licensing process, ii) impact of exam implementation on the perception of the pharmacist, and iii) perceived fear associated with implementation. Participants highlighted that the current exam does not reflect knowledge and skills required for practice in Qatar and indicated a standardized, competency-based exam may improve patient care and perception of pharmacists. While acknowledging benefits of a standardized competency-based exam, amongst numerous fears, participants lacked confidence in their ability to complete the exam and had concerns that an exam would lead to a pharmacist shortage in the country. **Implications:** Participants recognized the value of implementing a competency-based exam however, prior to implementation fears must be addressed by the Supreme Council of Health with support from the College of Pharmacy.

**Professional Education and Experience in Practice: How Pharmacists Learn about their Prescribing Role.** Terri J. Schindel, University of Alberta. **Objectives:** Dramatic changes in pharmacy practice have occurred over the last decade. Specifically, legislation introduced pharmacist prescribing in Alberta, Canada in 2007. This study examines the influences of professional education and practice experiences on how pharmacists learn about their prescribing role. **Method:** Following a constructivist grounded theory methodology, purposive and theoretical sampling were used to recruit practicing pharmacists with additional prescribing authorization (APA). In-depth semi-structured interviews explored how the pharmacists implemented and learned about prescribing. Interviews were recorded and transcribed verbatim. Analysis involved iterative coding to compare concepts and themes using NVivo 10 software. **Results:** Twenty pharmacists participated in the study (13 female, 7 male). All participants were graduates from Canadian universities with the majority from the University of Alberta (15). Twelve pharmacists had additional training including residency (7), PharmD (5), MBA (1), and certifications (4). Years in practice, type of practice, and experience with APA varied among participants. Everyday practice influenced how pharmacists learned about and accepted responsibility for their new prescribing role. Pharmacists emphasized the importance of learning from other pharmacists, physicians, networks of peers, and teaching students about the prescribing role. Adopting a specialty or focused area of practice supported learning. Foundational knowledge developed in the first degree influenced formation of an identity as a medication expert. Professional education, continuing education, and certification played a role in developing confidence. **Implications:** This research points to professional education, including continuing education, and practice experience as influencing how pharmacists’ learn about their prescribing roles. The importance of responsibility is highlighted.

**Survey of Pharmacist’s Role and Professional Development Needs in Alberta, Canada.** Christine Hughes, University of Alberta, Terri J. Schindel, University of Alberta, Jason Daniels, University of Alberta, Nese Yuksel, University of Alberta, Stanley Varnhagen, University of Alberta, Rene Breault, University of Alberta. **Objectives:** Education and continuing professional development (PD) is an important facilitator of innovation and expanded scope of pharmacist’s practice. The purpose of this study is to understand how pharmacists perceive their role and PD needs. **Method:** Pharmacists on the Alberta College of Pharmacists clinical register were invited to participate in a web-based survey in October 2014. Survey questions were based on literature and focus group interviews. Reliability and validity testing of questions was performed. Analysis included descriptive statistics and chi-square test to assess differences among groups. **Results:** A total of 416 pharmacists completed the survey (10.4% response rate). The majority were female (69%), had been in practice for >10 years (57%), and worked in community (65%). Pharmacists were engaged in a variety of roles including patient care, communication/education, collaboration, and public health. Approximately 72% felt the pharmacist’s role was changing significantly. Learning at work (66%), courses (66%), mentorship programs (63%), workshops (63%), and networking with peers (63%) were most commonly reported PD as required to support current and future roles. PD of most interest included clinical decision making (84%), patient assessment (79%), and applying best evidence to patient care (72%). Significant differences in participant responses based on demographics, experience, and practice were noted. **Implications:** Pharmacist’s roles are evolving in practice and new approaches to PD are needed, including informal learning at work. Pharmacists identified patient assessment (including physical assessment), clinical reasoning, and decision making skills as areas of interest. Targeted PD approaches based on experience and practice are warranted.

**The Impact of a Pharmacist Instructors Workshop in a Program Evolving to an Entry-to-Practice PharmD.** Katherine Seto, The University of British Columbia, Colleen M. Brady, The University of British Columbia, Tamiz J. Kanji, The University of British Columbia, Tony Seet, The University of British Columbia. **Objectives:** To examine the impact of a workshop offered to pharmacist instructors who teach in the pharmacy skills courses in the current BSc(Pharm) program at the University of British Columbia. The workshops were designed to equip instructors with the advanced knowledge and clinical skills necessary to teach in both the current program and the new entry-to-practice PharmD program. The majority of instructors have not received any formal training on effective teaching and there was a need to provide them with educational support. **Method:** One day workshops were offered to the 44 pharmacists who teach in the BSc- (Pharm) program. The workshops were divided into sessions that addressed the following topics: instructor roles and responsibilities, professionalism and code of conduct, facilitation and group dynamics, providing feedback, the ethics of teaching, clinical documentation, and vital signs. Each instructor prepared and delivered a mini-lesson on a pharmacy topic to a group of peers and received feedback on their presentation. **Results:** The workshop was evaluated using a Likert scale presented on Poll Everywhere, an audience response system. Ninety-seven percent of respondents found the workshop helpful. When asked about changes they will make to their teaching practices, the instructors stated improved ability to: provide constructive feedback, mark clinical notes, and manage challenging group dynamics. Suggestions for future workshops include: resolving conflicts, delivering PowerPoint presentations, teaching using Human Patient Simulators, interpreting lab values, and respiratory examination. **Implications:** The instructors who participated in the workshop felt better prepared to support the growth and learning needs of pharmacy students.

**Using a Multiple Logistic Regression to Model the Probability of Passing the NAPLEX.** Alejandra Zertuche, University of the Incarnate Word, David F. Maize, University of the Incarnate Word, Renato Leduc. **Objectives:** Identifying students likely to perform poorly on
Weimin Cai, **EXPERIENTIAL EDUCATION**

**Adjunct Assistant Professor**

**Department of Pharmacy Practice**

**Albany College of Pharmacy and Health Sciences**

**Objective**: To develop and implement a two-week, 80 hour institutional Introductory Pharmacy Practice Experience (IPPE) for third year pharmacy students and to assess their perceptions of the experience over a four-year period. **Method**: An institutional IPPE program was developed and conducted over a two week block. Each year, students completed dispensing and clinical pharmacy activities at an academic medical center as facilitated by faculty, pharmacists, and residents. A 23-item survey using a 5-point Likert scale and three open-ended questions was administered to assess students’ perceptions of IPPE. Descriptive statistics were used to evaluate survey results and Kruskal Wallis was used to compare data from each year. **Results**: In the four-year period, 115 students completed the survey (96%). Overall, students agreed that participation in IPPE was worthwhile and would aid in preparation for Advanced Pharmacy Practice Experience (APPE) (mean scores 4.7, 4.7, respectively). The majority of students agreed that IPPE increased their knowledge and understanding of institutional pharmacy practice and the role of clinical pharmacy specialists (mean scores 4.6 and 4.7, respectively). Students reported that rounding with clinical pharmacy specialists, order simulation and verification, and participation in a code response simulation were the most enjoyable activities each year (mean scores 4.7, 4.2, 4.4, respectively). There were no significant differences between survey responses for any year. **Implications**: The majority of students reported positive perceptions of the IPPE program. A two-week, 80 hour IPPE program can improve students’ understanding of institutional pharmacy practice and aid in preparation for APPE.

**A Novel Laboratory Based Toxicology Advanced Pharmacy Practice Experiential Teaching and Learning Approach in Pharmacy.** Wasana K. Sumanasekera, **Sullivan University. Objectives**: To implement and evaluate laboratory based Advanced Pharmacy Practice Experiential teaching and learning approach in toxicology using two different cell culture models, namely cardiac stem cells and ovarian cancer cells. **Method**: Twenty three APPE rotations, which explore twelve research projects, were performed using classes of 2012, 2013, and 2014 final year pharmacy students. Toxicology APPE rotations were assigned to either cardiovascular arm (16) or ovarian cancer arm (7). Student perception towards APPE experiences were assessed using survey criteria. The grade of the students was determined by the preceptor via assessing skills of the student including hands-on laboratory skills. The aptitude of these APPE rotations to provide professional growth of the students was assessed via keeping track of the student participation on abstracts, posters, and publications. **Results**: All students received hands-on training on techniques in bio-medical sciences. As expected, all students perceived these rotations as either agreeable or strongly agreeable on all the criteria surveyed. As we hypothesized, there was no significant difference of students’ perception towards each of the survey criteria between three different classes of students as well as two different research arms. APPE experience provided students with opportunities for professional development. Although students really enjoyed the unique experiential opportunity, only 20% were confident about how this APPE rotation leads to a different career path in Pharmacy. **Implications**: Development of technical, analytic, and critical thinking skills that are required to thrive as a future pharmacist; Provided opportunities for professional growth; and facilitated research competence in students.
A Survey to Assess Student Perceptions and Solutions When Class Time Conflicts With IPPE Hours. Robert M. Breslow, University of Wisconsin-Madison, Andrea L. Porter, University of Wisconsin-Madison, Daniel R. Katzenberger, Anthony J. Hennes. Objectives: To assess the causes and extent of student absence from the classroom and possible solutions when introductory pharmacy practice experience (IPPE) hours conflict with class time. Method: A Curriculum Committee task force comprised of faculty and students developed a survey to assess the problem and student preferences for potential solutions. The survey consisted of 9 questions in one of the following formats: yes/no; multiple choice with single and multiple responses; a rank order question to assess possible solutions. All P1 through P3 students (n = 401) were eligible to participate in the online survey during a 2-week period in the spring of 2014. Results: A total of 281 students (70.1%) completed the survey. Students overwhelmingly (76.2%) reported that class time interfered with the completion of IPPE hours and reported missing classes (66.5%). The most common explanations were travel time to the pharmacy site, the pharmacy’s hours of operation, and preceptor availability. Solutions preferred by the students were: no class on one day of the week; lecture capture all courses; and no penalty for missing class. Implications: Many students have experienced a conflict with completion of IPPE hours and class attendance. This has forced students to make a choice between attending class or completion of IPPE hours. Some solutions would require statutory or other changes not under the control of the School of Pharmacy while others could be more easily implemented. Schools and Colleges of Pharmacy with a similar curricular design could benefit from the survey findings.

An Innovative Preceptor Video Mini-Series to Prepare Students for Experiential Rotations: Could it Work? Craig D. Cox, Texas Tech University Health Sciences Center, Michelle Castelli, Jason Serna, Brittany Patterson, Texas Tech University Health Sciences Center. Objectives: To determine whether an innovative Mini-Series training model originally developed for preceptors could be beneficial to pharmacy students prior to and/or after beginning their introductory or advanced pharmacy practice experiences. Method: This program consists of twelve incremental episodes, each ranging from five to eight minutes in length. New reflection questions aimed at students were written for each episode to facilitate discussion. Two-hour viewing sessions, consisting of a combination of the (12) video episodes and student reflections were held for 1st – 4th year professional students on two campuses. At conclusion of each session, students completed a short evaluation to gauge the effectiveness and potential application for this program. Results: 56 students (22 fourth-year, 6 third-year, and 28 second-year) participated in the voluntary viewing sessions in Lubbock and Amarillo, Texas. 100% of students either agreed or strongly agreed that the Mini-Series program was entertaining and educational. 82% of students strongly agreed this program would be beneficial for students prior to taking their first experiential rotation, while only 47% said it would be beneficial after they had started rotations. On a 5-point Likert scale, participants reported a mean of 4.6 that this program is more effective than traditional lecture orientations held by the Office of Experiential Programs. Implications: The “Preceptor Mini-Series” model is an effective training medium to deliver educational content to students. As a result, more programs are being developed utilizing this innovative teaching method targeting students who have yet to start their experiential rotations.

A Two-lens View: Measuring Interprofessional Education (IPE) During APPEs. Joseph C. Clifton, University of Washington, Jennifer Danielson, University of Washington, Stanley S. Weber, University of Washington. Objectives: To characterize and compare perceptions of interprofessional collaboration during advanced pharmacy practice experiences (APPE) from students and preceptors. Method: Through a web-based, end-of-APPE evaluation, 101 students and 280 preceptors completed questions about interprofessional interactions experienced at APPE sites (Clinic, Community, General Medicine, Inpatient, or Other). Questions targeted level of integration with team (observation through direct participation in decision making) and shared levels of accountability for patient outcomes. Data was continuously collected over 11 months and analyzed using Excel. Results: More students (55%) than preceptors (38%) perceived students as “fully integrated” with the interprofessional team in General Medicine settings. Conversely, more preceptors (48%) than students (36%) perceived students as “fully integrated” with the team in Community settings. Students having General Medicine as their 7th rotation or later rated their role on the team as “Full Integration” at over twice the amount (83%) as preceptors (33%). In general, preceptors perceived students as sharing “full accountability” with the interprofessional team to a greater extent than students—the largest difference in community settings (48% of students, 74% of preceptors). A general trend toward greater student accountability with the team was observed by all as the year progressed. Implications: Assessing interprofessional interactions during APPE evaluation characterizes similarities/differences in student and preceptor perceptions of collaboration. Continued assessment may elucidate whether discrepancies are due to student overconfidence, insufficient preceptor training, different expectations, or other variables. Further refinements of these metrics will allow schools to determine appropriate practice experiences that build competency in interprofessional team dynamics.

Assessing Health and Wellness (HW) IPPE Utilizing Rubric Grading of Student Projects and Reflection Summaries. Debra B. Feinberg, Albany College of Pharmacy and Health Sciences, Teresa J. Lubowski, Albany College of Pharmacy and Health Sciences, Kristel Sidlauskas, Albany College of Pharmacy and Health Sciences. Objectives: To evaluate the quality of projects and to review student reflections during the course of a HW IPPE. Method: P1 students submitted 3 site specific projects completed during their 1 week HW IPPE. Faculty evaluated the projects utilizing a rubric as exemplary/E, acceptable/A, or unacceptable/U. The rubric assessed the project for quality, integrative learning, resourcefulness, originality, professional language and assessment. Students submitted a paragraph summarizing their reflections. The reflections were categorized and mapped to the CAPE 2013 educational outcomes. Results: 227 students each submitted 3 projects. The 3 most commonly submitted projects were creation/dissemination of health education; participation in an awareness event; and individual health interventions. Graded projects: 89% exemplary, 10% acceptable and 1% unacceptable. The most common perception was the ability to work with special populations followed by becoming more well-rounded/expanding horizons, communication and caring/helping others. 6.9% of students expressed that the IPPE perception was the ability to work with special populations followed by becoming more well-rounded/expanding horizons, communication and caring/helping others. 6.9% of students expressed that the IPPE

Assessing Knowledge and Use of Natural Supplements in Nursing and Pre-Pharmacy Students. Patricia G. Buderwitz, The University of Rhode Island, Sydney P. Springer, Katherine K. Orr, The University of Rhode Island, Anne L. Hume, The University of Rhode Island.
Objectives: To assess freshmen pre-pharmacy and nursing students’ knowledge of and confidence in purchasing natural products; to promote the safe and responsible use of natural products among freshmen college students; and to facilitate interdisciplinary interaction among freshmen students majoring in nursing and pre-pharmacy. Method: First-year pre-pharmacy and nursing students were invited to a short presentation introducing common natural products, current regulations of these products, and methods to evaluate online resources for further information or purchase. Students also viewed select Public Service Announcements (PSAs) from the College of Pharmacy’s Self-Care class. A voluntary retrospective pre- and post-survey was disseminated to gauge how frequently they or their family members use natural products, their level of confidence in purchasing and evaluating product information, as well as their perception of the role of a pharmacist or nurse in natural product use. Results: Twenty-eight students completed the survey: 14 pharmacy, 9 nursing, and 5 “other” majors. The retrospective pre-post survey demonstrated a significant increase across all questions. Average confidence in the ability to make informed purchases and evaluate online resources increased 29% and 24%, respectively. A 25% increase was noted in familiarity with common natural products and understanding the role of a pharmacist or nurse as a source of information. Overall supplement use was low. Implications: As future healthcare professionals, pre-pharmacy and nursing students will become valuable patient resources on supplement use. PSAs are an engaging educational method to learn about dietary supplements and allowed for inter-professional discussion on the responsible use of these products.

Assessment of Institutional Preceptors on Early Experiential Rotations during the Traditional Academic Year. Robert B. Stanton, Marshall University, Craig A. Kimble, Marshall University, Stephanie Anderson, Marshall University, H. Glenn Anderson, Marshall University, Kimberly A. Broedel-Zaugg, Marshall University. Objectives: 1. Assess institutional preceptors on their opinions of early experiential rotations in general. 2. Assess institutional preceptors on their opinions if early student rotations were valuable to the students 3. Assess institutional preceptors on their opinions if early experiential rotations provided no benefit to the site nor the preceptor.

Results: Twelve out of 12 institutional preceptors responded to the anonymous survey. Unanimous agreement was reached among the preceptors that the student received value from the early P1 rotation. However, there was not unanimous agreement that early rotations changed student perceptions of the role of a pharmacist or nurse as a source of information. Overall supplement use was low. Implications: As future healthcare professionals, pre-pharmacy and nursing students will become valuable patient resources on supplement use. PSAs are an engaging educational method to learn about dietary supplements and allowed for inter-professional discussion on the responsible use of these products.

Assessment of the Circumstances Surrounding and the Impact of APPE Changes on Preceptors. Mark A. Stephens, Union University, Sean R. King, Union University, John E. Puryear, Union University, Andrew Martin, Union University. Objectives: To assess the circumstances surrounding and the impact of APPE changes on preceptors. Method: A questionnaire was emailed to all Union University preceptors who had trained ≥ 2 students in the previous year and were scheduled to train ≥ 2 students in the current year. Results: Of 91 preceptors surveyed, 70.3% completed the questionnaire. Respondents included 29.7% from community practice and 46.9% from acute care practice. Of respondents, 56.3% precept for ≥ 2 schools, and 92.1% had ≤ 3 rotation changes over the past two years from any school. The majority of preceptors (63.5%) preferred ≥ 4 weeks’ while 20.6% preferred ≥ 8 weeks’ notice before adding a student. The majority (61.2%) preferred ≥ 2 weeks’ while 43.7% preferred ≤ 4 weeks’ notice before removing a student. Adding a student decreases work efficiency for 38.1% of respondents and increases efficiency in another 38.1%. Removing a scheduled student results in decreased, mixed, or increased work efficiency in 25.0%, 40.6%, and 34.4% of respondents, respectively. Life changing events, serious illnesses, or other reasons specifically approved by the School were acceptable reasons to change schedules for the majority of preceptors. Implications: Most preceptors prefer ≥ 4 weeks’ notice before adding and ≥ 2 weeks’ notice before removing a student. Adding or removing students has a varied effect on preceptor work efficiency. Acceptable circumstances to approve rotation changes included life changing events, serious illness, or a reason approved by the School. Circumstances not approved included financial hardship, driving distance, or changes in practice interest.

Best Practice for Assessing Achievement of ExEd Learning Outcomes: A Systematic Literature Review. Katrina Mulherin, University of Toronto. Objectives: The Canadian Experiential Education (CanExEd) Project for Pharmacy completed a systematic review to determine best practice in assessment of student achievement of learning outcomes within experiential education (ExEd) settings. Method: Multiple databases (CINAHL, EMBASE, ERIC, IPA, Medline, Scopus) were searched using the terms: Assessment or Evaluation AND Performance or Competence AND Experiential or Clinical or Field placement or Rotation or Practic* AND Preceptor or Assessor or Rater or Supervisor or Staff or Faculty AND Student. Inclusion criteria: English, years 1994-2014. All identified article abstracts were reviewed for relevance to ExEd. Relevant articles were retrieved in full text and analysed using a tool to extract the purpose/goal of each paper, protocol/methods, results, conclusion and project application. Results: Searching identified 365 initial results. Three hundred and four were excluded, leaving 61 relevant papers. Fifteen were conference proceedings that were untraceable for analysis. In total, 46 articles had data extracted. Much of the relevant literature originated within medicine. Analysis suggested 12 specific criteria contribute to high-quality assessment of students in ExEd: 1. Congruency of tool with purpose of assessment 2. Reflection component 3. Alignment between learning outcomes and assessment 4. Rater accuracy 5. Authenticity in assessment domains 6. Ease of tool use 7. Clear descriptive standards 8. Criterion-referenced grading 9. Multiple source feedback 10. Prompt assessment 11. Tool validity 12. Tool reliability. Implications: ExEd assessment prototypes should be developed with the 12 criteria in mind. Incorporation of criteria will require multiple assessment tools and participant training in their use.

Comparison of Rubric-Derived and Preceptor-Perceived Grades for APPE Rotations. Sarah R. Peppard, Concordia University Wisconsin, Melissa L. Theesfeld, Concordia University Wisconsin. Objectives: Developing assessment tools that reflect student performance during experiential rotations can be challenging given the subjective nature of preceptor evaluations and variability in pharmacy practice at experiential sites. A rubric to determine final course grades was
developed for APPE rotations utilizing ratings from three evaluation components: pharmacy practice skills, required activities, and professionalism. This analysis looked at the correlation between letter grades derived from the rubric and perceived letter grades from preceptors. **Method:** Final letter grades are calculated by the Office of Experiential Education from ratings assigned by preceptors for the three evaluation components. Starting in May 2014, a confidential quality assurance question on the final evaluation for all APPE rotations asked preceptors to assign a letter grade based on the students’ overall performance. These letter grades were compared to the rubric-derived grades. **Results:** A total of 289 grades were evaluated from the first four APPE rotations: 277 A’s, nine B’s, one C, and two F’s were earned by students. The rubric-derived letter grade agreed with the preceptor’s perceived letter grade in 217 (75.1%) cases. Of those that didn’t agree, 68 (94.4%) and 4 (5.6%) differed by 1 or 2 letter grades, respectively. In all but one case, the perceived letter grade from the preceptor was lower than the rubric-derived grade. **Implications:** The majority of final letter grades received by students during APPE rotations reflect the perceived grade from preceptors. Continued analysis of this data will help to understand this trend and its implications for rubric-driven grades during APPE rotations.

**Comparison of Two Modalities for Delivering Pharmacy Student Therapeutic Interventions on a Cardiology Rotation.** Scott Brauer, Creighton University Medical Center, Kathleen A. Packard, Creighton University, Daniel E. Hilleman, Creighton University, Yongue Qi, Creighton University. **Objectives:** Optimizing prescriber acceptance rates of pharmacy student interventions can improve outcomes. Acceptance rates range from 40.5%-97.9% and are influenced by delivery modality. This study compared intervention delivery at two cardiology rotation sites, one written and one verbal. **Method:** From June 2013-May 2014, all therapeutic interventions were captured at two, five-week cardiology rotations. At the private medical center, 220 written interventions were delivered by 24 students. At the academic medical center, 310 verbal interventions were delivered during rounds by 14 students. Data extracted included intervention type, justification, drugs involved, and acceptance. The mean number of interventions per student per site was compared using Student’s t-test. The acceptance rate for each site was compared using Chi Square test. Associations between acceptance rate and time and acceptance rate and interventions per student were assessed using the Cochran-Armitage Trend test. **Results:** The mean acceptance rate for written versus verbal interventions was 52% versus 73%, respectively (p<0.001). Students averaged 9.2±3.5 interventions per rotation at the written site versus 22.1±8.9 at the verbal site (p<0.0001). There was no relationship between number of interventions per student and acceptance rate, nor between acceptance rate and time of academic year. **Implications:** Collaboration between pharmacy students and preceptors can positively affect patient outcomes. This study suggests students that verbally interact with providers generate more interventions and have superior acceptance rates.

**Confidence and Self-Perceived Readiness for Advanced Pharmacy Practice Experiences by Student Year.** Kathleen J. Pincus, University of Maryland, Lisa Lebovitz, University of Maryland, Stuart T. Haines, University of Maryland. **Objectives:** The objective of this study was to assess pharmacy students’ confidence and self-perceived readiness for advanced pharmacy practice experiences (APPEs) as they progress through the pharmacy school curriculum. **Method:** All students (P1-P4) were invited to complete a 20 item survey in Fall 2014. Participation was voluntary and anonymous. Participants rated their confidence on a 6-point scale to perform 10 specific tasks matching 10 of the 11 pre-APPE domains. Tasks were anchored in realistic case scenarios commonly encountered in practice. Responses by class year were compared using one-way ANOVA analysis and the Tukey’s HSD test. **Results:** Eighty-four surveys were completed (P1 n=13/159, P2 n=23/163, P3 n=18/152, P4 n=30/164). Confidence in all domains except general communication abilities increased significantly with each class year (p<0.01). For 9 of the 10 domains surveyed, a significant difference existed between the confidence of P1 respondents and all other student years. The largest increase in confidence occurred between P1 and P2. Statistically significant differences were seen between P2 and P3 in patient safety, medication information, and identification and assessment of drug-related problems. No significant differences were observed across P2, P3 and P4 years in patient assessment; ethical, professional and legal behavior; general communication abilities; patient information; drug information analysis and literature research; health and wellness. Only 57% of P4 respondents rated her/himself at least knowledgeable in the ability to counsel a patient regarding prescription drug insurance coverage. **Implications:** Confidence to perform pre-APPE tasks improves throughout the curriculum. The low response rate makes it difficult to generalize the results.

**Current Use and Perceptions of Clinical Intervention Databases by Pharmacy Graduates.** Lea S. Eiland, Auburn University, Lynn Stevenson, Auburn University, Miranda R. Andrus, Auburn University. **Objectives:** To describe the current use and perceptions of intervention database systems by pharmacy graduates who were required to document clinical interventions during their APPE education. **Method:** All fourth year student pharmacists (P4) are required to document patient interventions in a single, commercially-available web-based, documentation system during their APPEs. Graduates from the classes of 2012-2014 were surveyed regarding current use of clinical interventions systems and documentation requirements at their place of employment. Graduates were also asked about the impact of required documentation as a P4 and perceptions of the importance of pharmacists documenting interventions. **Results:** Ninety-five graduates responded to the survey (22%) and practiced in a variety of settings (community, institutional, long term and ambulatory care). Fifty-six percent of respondents stated they currently use a clinical intervention documentation system. Of these, 81% stated documentation was a requirement. The majority of respondents felt ‘prepared’ (38%) or ‘very prepared’ (52%) to document interventions and 45% stated documenting interventions was a ‘well developed habit’ based upon their APPEs. Of those that did not document, 14% stated a system was available but not required and 75% stated a lack of documentation system. Overall, 64% of respondents stated it was ‘very important’ for pharmacists to document interventions and 75% felt the P4 documentation requirement was valuable to their future career. **Implications:** Clinical intervention documentation systems are frequently used by our graduates in their places of employment. The requirement of documenting clinical interventions as a P4 student prepared graduates for documenting interventions in their current workplace.

**Developing a Framework to Evaluate the Use of Virtual Patient Technology for Advanced Pharmacy Practice Experiences.** Doret Cheng, University of Toronto, Zhi Li, University of Toronto. **Objectives:** Virtual Patients (VP) are interactive computer-based simulations proven to help students improve knowledge and develop clinical reasoning skills. The aim of this study is: 1) to determine if VP technology can facilitate students’ transition to advanced pharmacy practice experience (APPE)’s and remediation and 2) to develop a framework to compare various VP platforms. **Method:** A literature search using the Where and How to Search for Evidence in the Education Literature (WHEEL) strategy
was conducted. Six databases (Medline, CINAHL, Embase, Scopus, ERIC and IPA) were searched to identify relevant VP studies. All pharmacy educational studies related to VP were reviewed. **Results:** There is a paucity of literature addressing VP use specifically for APPEs and remediation. Four commercially available platforms were identified in the pharmacy literature: MoodleTM, VpSim (via Decision SimulationTM), Web-SPTM, and UnityTM. No studies compared VP platform features to student outcomes. A framework was developed identifying (based on 2 meta-analysis) 12 evidence-based features when comparing different VP platforms: range of difficulty, repetitive practice, distributed practice, cognitive interactivity, multiple learning strategies (VP in conjunction with other learning methods), individualized learning, mastery learning, detailed feedback, longer practice time, clinical variation, emulate clinical encounters and menu-driven VP with advance organizer. **Implications:** Given the wide variety of educational technology available, using evidence-based features to establish a framework will assist in selecting the most suitable VP platform(s) to enhance student learning outcomes. Further research is required to determine whether VPs are useful in facilitating students’ transition to APPE’s and remediation.

**Effects of Prior Degree and Age on Course Evaluations.** Stacy L. Longo, Western New England University, Matthew R. Dintzner, Western New England University. **Objectives:** The objective of this study was to determine the effects (if any) of prior degree and age on course evaluations. **Method:** To our standard course evaluation instrument, we added two demographic questions pertaining to age-range and degree(s) obtained prior to entering the PharmD program. The evaluations were administered as usual, electronically through Qualtrics at the end of each course in fall 2014. Response data were correlated within Qualtrics then downloaded to Microsoft Excel for workup and analysis. **Results:** Responses from 14 didactic courses (fall semester PY1-PY3) were examined. Response rates for the surveys were 85-100%. Good correlation between degree(s) obtained and age-range was observed: 83% of students with prior degree(s) were 25 or older; 79% of non-degree students were under 25. No statistically significant difference was observed, however, between how the two defined groups of students (Degree/older vs. Non-degree/younger) responded to the course evaluation statements. Median values for respondents who strongly agreed or agreed to statements were 88% and 90% for Degree/older and Non-degree/younger students, respectively. Median values for respondents who disagreed or strongly disagreed were identical for the two groups at 4%. **Implications:** While many factors contribute to how PharmD students evaluate courses, age-range and/or prior degree status appear not to be among them.

**Establishing Guidelines and Criteria for International and Global Health APPE Electives.** Doret Cheng, University of Toronto. **Objectives:** The Leslie Dan Faculty of Pharmacy at the University of Toronto implemented its fledgling APPE program in 2014. With the shift resulting in a greater portion of pharmacy curriculum dedicated to experiential learning, opportunities for international and global health experiences as part of introductory and advanced pharmacy practice experiences (APPE) have also expanded. Our objective was to establish clear, concise, and evidence-based guidelines and criteria for international and global health APPE electives. **Method:** A comprehensive literature search and environmental scan was conducted. Other sources such as pharmacy association reports and accreditation standards were also incorporated to develop the framework and guidelines. A number of global health practitioners and faculty members reviewed the guidelines and provided recommendations. **Results:** The following themes formed a framework to guide the development of guidelines and criteria for international and global health APPEs: guiding principles and objectives, site and preceptor requirements, and student requirements. Within each of the major themes, the following recommendations were identified as essential for a successful program: safety, student preparation, adequate site and faculty support, collaboration, mutual benefit, established long term relationship between sending institution and receiving site and iterative evaluation of the student experience and site. **Implications:** The established guidelines, based on best practices, will guide the engagement of students, sites and faculty in international and global health initiatives. When applied towards APPE rotations, an optimal balance may be established to ensure students obtain valuable experiences, while contributing to the work of the global health community.

**Evaluation of Medicare Part D Counseling Using Service-Learning Introductory Pharmacy Practice Experiences (IPPEs).** Ashley N. Hannings, The University of Georgia, Deanna W. McEwen, The University of Georgia. **Objectives:** To implement Medicare Part D Counseling learning activities within IPPEs that assess student communication and problem solving skills and attitudes towards service-learning. **Method:** P(2) students (132) received online training for Medicare Part D Counseling followed by a 3 hour skills lab simulation and a 3 hour shift with the community partner, Georgia Cares (State Health Insurance Assistance Program), where they assisted clients by phone. Evaluation methods for the live experience were: (1) 5-point rubric used by preceptors to evaluate students’ abilities (communication / problem solving) (2) Customer satisfaction surveys (3) Student perception surveys. **Results:** Seven hundred eighty-six individuals were assisted during open enrollment, which was a 39% increase from the year before students were incorporated. 48.5% of students were able to resolve the clients’ questions with minimal preceptor supervision, and 37.9% were able to perform independently without preceptor assistance. 94.7% of students were able to provide organized, accurate communication with minimal supervision or independently. While students worked with clients of older age and various socioeconomic backgrounds, only 55.6% of students agreed or strongly agreed that the experience helped them understand people of different ages and 52.6% for people of different cultures or economic backgrounds. **Implications:** This IPPE documents students’ ability to assist patients with prescription medication coverage. While students were able to effectively communicate with clients, they did not perceive differences in culture, ages, and socioeconomic backgrounds through phone interventions. Through incorporating pharmacy students during open enrollment, non-profit organizations can increase their community outreach impact.

**Evaluation of Revised Experiential Education Student Performance Assessments.** Ann Thompson, University of Alberta, Marlene Gukert, University of Alberta, Sheila Watler, University of Alberta, M. Kenneth Cor, University of Alberta. **Objectives:** In 2013, the experiential education team revised the midpoint and final student performance assessments completed by preceptors for all experiential courses. The goals were to create tools aligned with clearly identified course outcomes and to increase reliability by standardizing behaviours considered when rating outcomes. Our objective is to report on the evaluation of the assessments for representativeness, utility for providing feedback, and ease of use based on preceptor feedback. **Method:** Closed and open-ended questions about the new assessments were added to preceptor surveys administered at the end of each course over the last 2 years. The evaluation data was used to revise the assessments. **Results:** Analysis of the first two rounds of data revealed that preceptors felt tools were representative of student pharmacist skills/behaviours and helped to guide the feedback process. They also identified redundancy and excessive length. Based on these results, a set of targeted revisions was implemented. This included reducing...
the number of individual comment boxes and discrete behaviours preceptors rated to emphasize the holistic assessment of skills/behaviours related to each outcome. Implications: Our evaluation revealed that time to complete and ease of use are major factors in how assessment tools are perceived. While improvements were realized based on representativeness and utility for guiding feedback, the length and perceived redundancy created preceptor dissatisfaction. Our results suggest that assessments must also be concise and efficient for preceptors to complete.

Evaluation of an Assigned Leadership Model on Student Pharmacist Perceptions of Leadership Capability and Importance. Linda D. Hughes, The University of Georgia, Lindsey H. Welch, The University of Georgia, Ashley N. Hannings, The University of Georgia, Barrett Andrew Darley, The University of Georgia. Objectives: To evaluate changes in student-perceived capability of specific leadership skills and the perceived importance of those same skills for future career success using a modified version (40 out of 123 items) of the Lifelong Leadership Inventory™ (LLI) developed and validated by the National Center for Healthcare Leadership. Method: P3 students completed the LLI at the beginning and conclusion of leadership training incorporated into their Introductory Pharmacy Practice Experiences (longitudinal ambulatory care). The training component consisted of assigned leadership responsibilities in a patient care team. Students rated each item on the LLI using a 10-point Likert scale in order to rank their capability to perform the skill and its importance to their future career success. Results: Eighty-one students completed the survey and a pairwise t-test was conducted to compare the pre- and post-intervention data of both capability and importance. Results showed statistically significant differences in students’ ratings of capability in 39 of 40 items (p < 0.05) and importance in 6 of 40 items. For all items measured except one, all average scores of capability on the post-intervention survey were higher. Implications: This study identified a significant improvement in students’ perceptions of their capability to perform almost all surveyed skills after an assigned leadership experience. Limited increases in perceived importance post-intervention may be indicative of students’ initial high ratings on the LLI. Providing opportunities to practice leadership skills can result in an increase in student confidence to perform skills necessary for future career success.

Evolution of Block Model Scheduling for Advanced Pharmacy Practice Experiences. Denise M. Klinker, University of Florida, Stacey Curtis, University of Florida, Karen Whalen, University of Florida. Objectives: To describe the evolution of block model scheduling for advanced pharmacy practice experiences (APPEs). Method: In 2011 the University of Florida College of Pharmacy implemented a “block” APPE model in which a subset of students completed all required APPEs at a single institution. Based on feedback from focus groups with preceptors and students, the definition of a block was amended to include offerings of at least four months which contained at least one required APPE. Additional sites were informed of the block model via preceptor development workshops, email, and networking. Descriptive statistics were used to characterize the number of students afforded block opportunities, the number of sites providing blocks, and the percentage of students assigned to sites designated as quality or high-quality. Results: The number of students scheduled for block APPEs grew from nine (< 3%) in 2011-2012 to 185 (64.5%) for the 2014-2015 academic year. For 2015-2016, 257 students (92.8%) are scheduled for block rotations, with blocks averaging 4.9 months in duration. The number of practice sites offering block rotations increased from one to 42, with additional sites now requesting block APPEs. The percentage of student months scheduled at quality or high-quality sites rose from 93.3% to 97.6%. Implications: The uptake of the block APPE model indicates that preceptors/sites are receptive to block scheduling. Advantages of the block model include reduced time for onboarding and student orientation and training. Future directions include assessment of student perceptions of the block model and relationship to successful pursuit of residency training.

Four Weeks, Five Weeks, or Six Weeks APPEs: That is the Question. Patricia B. Naro, Samford University, Elizabeth S. McCullough, Samford University. Objectives: To describe from an experiential perspective, the opportunities and challenges of scheduling 4-weeks, 5-weeks or 6-weeks Advanced Pharmacy Practice Experiences (APPEs). Method: Prior to each academic year, preceptor availability is collected in order to schedule APPEs. Over the last three years, Samford had the unique experience of scheduling APPEs based on 4-weeks, 5-weeks, and 6-weeks. Availability obtained for scheduling of APPEs for academic years 2013-2014 (ten 4-weeks blocks), 2014-2015 (seven 6-weeks blocks) and 2015-2016 (nine 5-weeks) was assessed by the Experiential Office. Differences in the amount of availability received from faculty/affiliate faculty in the core courses of Ambulatory Care; Community Pharmacy; Institutional/Health Systems, General Medicine and Subspecialty Medicine were determined. Results: It was determined that by offering 4-weeks blocks or 5-weeks blocks, preceptor availability increased 15% to 55% over availability offered for 6-weeks blocks. Consequently, making schedule changes for 6-weeks blocks was far more challenging than making schedule changes for 4-weeks blocks due to less availability. Implications: Overall, availability from faculty/affiliate faculty is lower for 6 weeks blocks due to fewer available timeframes and fewer elective choices for students. This resulted in difficulties making necessary schedule changes during an academic year. To insure every student is scheduled for all required core APPE courses, scheduling of ten 4-weeks APPEs or nine 5-weeks APPEs allows more flexibility than scheduling 6-weeks APPEs. Additionally, students receive a more diverse APPE schedules.

Impact of Co-op Experiential Learning on the Professional and Personal Development of Canadian Pharmacy Students. Certina Ho, University of Toronto, Atsushi Kawano, Brett Murphy. Objectives: In Canada, there is only one undergraduate pharmacy program that includes a co-op component. This is a qualitative study with an objective to find out how co-op experiential learning experience affects pharmacy students’ professional and personal development. Method: Open-ended questions were used in semi-structured interviews and focus groups to allow pharmacy students, co-op employers, and faculty members to freely express their viewpoints. An inductive approach was applied when generating themes from the transcribed data collected in this study. Thematic analysis was conducted using NVivo. Results: Main themes were identified from 19 pharmacy students’ interviews, 12 co-op employers’ phone interviews, and 2 faculty focus groups. Students developed confidence, identified self- and career-related discovery; they provided constructive feedback to the co-op program and shared the challenges in classroom versus real-world practice during the interviews. Co-op employers recognized students’ individual growth during co-op, yet pointed out some mismatches between the curriculum and expectations in co-op during their phone interviews. Faculty members were pleased to see that students took ownership of their learning, the integration of knowledge between classroom and work placements, and students’ maturity and professional growth during co-op; but were a bit concerned about the unstructured nature of co-coop. Implications: We have made assumptions on students’ professional and personal development during co-op placements. However, we attempted to use triangulation of data from co-op employers and faculty members to substantiate our findings. In future curricular
Implementation of a Peer Mentor Shadow Program for Year One and Year Four Pharmacy Students. Shauna Gerwing, University of Saskatchewan, Yvonne Shevchuk, University of Saskatchewan, Linda Suveges, University of Saskatchewan. Objectives: This project’s goals were to: introduce first year pharmacy (P1) students to community pharmacy practice and to provide year 4 (P4) students with opportunities to mentor someone and to reflect upon and share their experiences in the pharmacy program. Method: P1 and P4 students attended a one-hour class covering policies and procedures for the experiences. Each P1 student was then matched with a P4 student in a community pharmacy rotation. During the three hour experience, the P1 student ‘shadowed’ the P4 student and completed basic tasks such as labelling prescriptions and observing patient counselling. The pharmacist preceptor was available for consultation but the activity was designed to allow the P4 student to take the mentorship role. The experience was qualitatively evaluated based on responses from each student. Results: Students generally agreed that this shadow experience was valuable. It provided the P4 student with valuable experience for future preceptor roles. P1 students were exposed to the ‘real life’ of a pharmacist. In the pilot year, 80 students returned evaluation forms. While the experience was valuable, it was recommended the experience be optional for those who already have pharmacy experience. Going forward, all feedback has been positive from both P1 and P4 students and their pharmacist preceptors. Implications: Due to the overwhelming success of this project, the College has integrated this shadowing experience into the curriculum, while adapting it as needed in response to evaluations and feedback.

Improving Medication Reconciliation in the Emergency Department by Incorporating APPE Students Into the Verification Process. Jayne LePage, MCPHS University–Worcester/Manchester, Michael DiNapoli, UMass Memorial Medical Center, Victoria Fisher, UMass Memorial Medical Center, Kyle Frielli, UMass Memorial Medical Center, Maich Tran, UMass Memorial Medical Center. Objectives: To evaluate the impact of a standardized, pharmacy-driven medication reconciliation (MR) verification process on the completion and accuracy of home medication lists for patients admitted through the emergency department (ED) at a large, academic medical center by incorporating advanced pharmacy practice experience (APPE) students into the process. Method: An interdisciplinary home medication care team was created to coordinate the implementation of pharmacy-driven MR verification in the ED. A step by step workflow, student workflow and data collection/monitoring tool were developed. Two teams of APPE students were trained on information technology (IT) systems and documents to be utilized during the MR verification process using a see one, do one, teach one approach. APPE student teams verified home medication lists for patients pre-defined as high risk and were admitted through the ED utilizing information from inpatient and outpatient IT systems, community pharmacies, family and caregivers. Discrepancies identified in the verification process were presented to pharmacist preceptors and reported to the transition of care team and admitted licensed independent practitioners (LIPs). Results: 11 MR verifications by APPE students completed, 23 discrepancies between initial home medications lists and information obtained from approved sources identified, 6 involving high risk medications. Details will be discussed. Implications: Pharmacy-driven MR verification in the ED and other transitions of care through the utilization of APPE students can increase the accuracy of patient medication information resulting in improvements in medication safety and patient outcomes. This area of pharmacy education should be further explored and utilized in institutional pharmacy practice environments.

Learner Perspectives of Structured Independent Learning Within an Emergency Medicine Pharmacy Practice Experience. Eric H. Gilliam, University of Colorado, Cherie Chu, University of Hawaii at Hilo, Lara Gomez, University of Hawaii at Hilo. Objectives: Learning modules were developed to provide structured learning within an advanced pharmacy practice experience (APPE) emergency medicine (EM) rotation in an urban emergency department. Each module focused on one common EM condition and consisted of learning objectives, a reading assignment, a pharmacotherapy review, and clinical scenarios. Additionally, each learner was required to develop a new learning module for future students on a topic encountered during the rotation. We sought to determine how learners perceived the learning modules as part of the EM rotation experience. Method: Pharmacy learners who completed the EM rotation evaluated the learning modules using an online electronic questionnaire consisting of twenty-eight items. Learners evaluated the design, content, application, and perceived value of the modules. Quantitative items used a five-point likert-scale. Results: Eight APPE students and five residents responded to the questionnaire (n=13, response rate = 76%). Respondents agreed the modules allowed for identification of knowledge deficits (mean 4.4) and acquisition of new knowledge (mean 4.5). Learners felt more prepared to discuss topics with preceptors by completing the modules (mean 4), however fewer students believed the resulting conversation with the preceptor was more meaningful (mean 3.5). APPE student responses differed significantly and more favorably compared to residents when responding to the questions “I would like other rotations to use similar learning modules...” (p=0.009) and “I enjoyed creating a new learning module for future students.” (p=0.042). Implications: Use of learning modules during an advanced clinical pharmacy rotation provides additional structured learning opportunities and is well received by learners.

Opportunities to Enhance Institutional Experiential Education: Mutually Beneficial Activities Analysis. Michael Legal, The University of British Columbia. Objectives: A province-wide stakeholder engagement project identified an urgent need to increase student involvement in patient care and other activities at hospital sites. Enhanced student value-add is likely to increase the willingness of sites to host students and will enrich the student experience. The goal of this project was to identify mutually beneficial activities (MBAs) that are practical, appropriate for the learner’s skill level, occur in real-time, and are both beneficial to the learner’s education and to the patient or pharmacy department. Method: This project utilized stakeholder feedback, literature review and informal interviews with hospital pharmacy coordinators to identify a raw list of MBAs. This list was then evaluated using an electronic survey deployed to staff pharmacists, coordinators, and recent graduates. The survey employed Likert and open-field responses. The open field responses were analyzed for themes using qualitative methods. Results: There were a total of 127 respondents. Activities were assessed based on four categories: learner preparedness, preceptor comfort, benefit to student learning, and benefit to the pharmacy department. Taking the curriculum into account, these MBAs were split into three tiers: activities all students can complete, activities students can complete with additional training, and a preceptor’s “wish list”. Implications: Promoting these activities as providing benefit to both the student and patient care would not only lead to reduced workload for preceptors but also augment...
existing institutional pharmacy services. Many of the activities identified are current targets of the national CSHP 2015 initiative to provide a higher standard of care across Canada.

**Preceptor Confidence Level in Performing APPE Precepting Roles.** Lena M. Maynor, West Virginia University. **Objectives:** Pharmacists are volunteer preceptors who mentor, teach, advise and monitor the progress of students. The primary objective of this study was to characterize the confidence level of pharmacist preceptors in performing various roles required of APPE preceptors. **Method:** All active APPE preceptors at West Virginia University during the Fall 2014 semester were invited to participate in a survey with questions targeted toward preceptor confidence in various precepting responsibilities. The survey was distributed as a hard copy mailing to each active APPE preceptor. Preceptors were asked to rate their confidence on each item on a 1-5 scale, 1 “strongly disagree” and 5 “strongly agree”. **Results:** Surveys were distributed to 187 preceptors, and 128 surveys (68%) were completed. Average scores for all items ranged from 3.9 to 4.6 on a scale of 5, indicating confidence with all tasks. Respondents precepting for more than 10 years had statistically significantly higher scores for early identification of a student at risk for not passing the rotation (4.48 v 4.15, p=0.01) and mediating conflict (4.36 v 4.06, p=0.02). Male preceptors had statistically significantly higher scores related developing plans for students at risk of not passing the rotation (4.07 v 3.65, p=0.02) and mediating conflict (4.43 v 3.92, p=0.00005). **Implications:** The results of this study provide insight into the confidence level of preceptors related to multiple tasks and guidance for needed preceptor development.

**Productivity and Cost-Savings Impact of Incorporating APPE Students into an Anticoagulation Clinic’s Rapid-Cycle Improvement Process.** Candace Tan, University of Southern California, Armine Markarian, University of Southern California, Thuyet Nguyen, University of Southern California, Steven W. Chen, University of Southern California, Rory E. O’Callaghan, University of Southern California, May C. Mak, University of Southern California. **Objectives:** Advanced Pharmacy Practice Experience (APPE) students make meaningful clinical interventions that result in cost-savings. However, there is limited information on students also fulfilling technical functions. The objective of this study was to describe a rapid-cycle improvement process incorporating APPE students into distinct roles in an anticoagulation clinic and to evaluate the impact on productivity and care quality. The secondary objective was to determine potential cost-savings of utilizing students in this care model. **Method:** An internal improvement process cycled APPE students through defined technical and clinical duties. Technical functions included vital sign measurement, point-of-care INR testing and medication reconciliation while clinical functions included provision of anticoagulation services and identification and resolution of other medication-related problems (MRPs). Clinic efficiency and anticoagulation quality markers were collected retrospectively and compared in the one-month pre- and post- period. Potential cost-savings was extrapolated using descriptive statistics. **Results:** Mean visit time decreased from 34.5 to 29.2 minutes (p-value 0.0000043) and percent INR within therapeutic range increased from 55.89% to 58.33% (p-value 0.039) in the pre- and post- phase. The projected cost-savings of a student performing a technical role is $2,447.50 per month. In addition, students identified and resolved 287 anticoagulation MRPs and 45 non-anticoagulation MRPs in their clinical role, with non-anticoagulation MRPs totaling $12,577.06 in cost-savings. **Implications:** APPE students fulfilling both technical and clinical responsibilities enhance productivity while maintaining quality of care and demonstrate cost-savings in the process. As they satisfy experiential requirements, students can also serve as a cost-efficient resource to help meet increasing clinical practice demands.

**Social Media Utilization among Pharmacy Preceptors.** Brett Ferer, The University of Rhode Island, Stephanie Romano, The University of Rhode Island. **Objectives:** To evaluate pharmacy preceptor’s current use of social media and the interest of using social media as a communication tool. **Method:** The Office of Experiential Education (OEE) disseminated an anonymous IRB-approved 28-question electronic survey to all affiliated preceptors (N=1032). The survey was designed to evaluate the frequency and extent to which the College’s preceptors utilize social media for personal and professional purposes, as well as their interest in using social media as a communication platform with the OEE. **Results:** The overall response rate for the survey was 21% (N=217). Seventy-seven percent of preceptors use at least one form of social media with the majority stating they use it for personal purposes (76.3%). Professional usage was reported at 32.3% and only 28.9% of preceptors reported at least some interest in receiving OEE updates through social media. **Implications:** The use of social media is continually expanding both in its number of users and types of social media accounts offered. Social media can be used as a tool to facilitate communication and networking, both on a personal and professional level. Although new technologies are available and communication via social media can be instantaneous and readily accessible, the majority of the preceptors affiliated with the College of Pharmacy were not interested in receiving important updates such as announcements and scheduling reminders from the OEE through social media platforms. Experiential programs should not consider social media utilization a priority for communication to preceptors.

**Students’ Perceptions of Integration of Introductory Pharmacy Practice Experiences in the Didactic Curriculum.** Kate Newman, Southern Illinois University Edwardsville. **Objectives:** This study was conducted to determine how students view the integration of Introductory Pharmacy Practice Experiences (IPPEs) during their 2nd professional year with the didactic curriculum. While the IPPE program is designed to build on and foster integration between classroom and experiential learning, it is unknown if and to what extent student perception matches this intentional design. **Method:** All students in their second professional year complete two 3-week-long IPPE rotations (one at each a community and an institutional site). During each rotation students complete a journal and are asked to reflect on an activity they participated in that week and relate it to previous classroom instruction. Student responses were reviewed for all rotations completed between fall 2013 and 2015. Responses were categorized by the course identified in each journal entry and the type of rotation the student was completing. **Results:** 325 journal entries were reviewed from 129 students resulting in 378 course identifications. The most commonly identified courses were Integrated Therapeutics Courses (31.75%), Pharmacy Skills and Techniques (18.52%), Self-Care (14.02%) and Drug Information (9.79%). In total, nineteen courses were identified. The type of rotation did not affect the courses mentioned with the exception of Self-Care which was identified more frequently in community sites. **Implications:** Students were able to connect real-life experiences during IPPEs with theoretical knowledge gained in the didactic curriculum. While most courses were identified at least once, this study indicates areas within the curriculum that may need more explicit integration with IPPE activities.
Students’ Reflections of an Interprofessional Health Promotion Course for a Vulnerable Population. Ann M. Ryan Haddad, Creighton University, Kimberly J. Begley, Creighton University, Kathleen A. Packard, Creighton University, Martha M. Todd, Creighton University College of Nursing, Jennifer C. Yee, Creighton University College of Arts and Sciences, Ann M. Laughlin, Creighton University College of Nursing, Barbara M. Harris, Creighton University College of Arts and Sciences, Joy D. Doll, Creighton University.

Objectives: To evaluate how an interprofessional health promotion course for a vulnerable population impacts students’ perceptions of interprofessional teams. Method: In its second offering, 27 students enrolled in the semester-long course (9 exercise science, 2 nurse practitioner, 6 occupational therapy, 7 pharmacy, and 3 social work). The students were divided into four teams each assigned a client with complex health and social issues. They engaged in learning activities, discussed team skills, and developed a collaborative agreement. Students’ perceptions were gathered through end-of-course reflection questions and focus group discussion. Results: Qualitative data was collected from student reflections and theme analysis was conducted by pharmacy faculty with expertise in interprofessional education and community engagement. Seventy-seven percent of the students spoke of the benefit of working on teams, 96% gained a better understanding of other professions, 100% expressed the importance of keeping the focus on the patient, and 65% understand effectively communicating with patients and team members is a priority. Implications: The themed analysis shows that students embraced the Core Competencies for Interprofessional Collaborative Practice (Values/Ethics for Interprofessional Practice, Roles/Responsibilities, Interprofessional Communication, and Teams and Teamwork). This course provides students the opportunity to collaborate in teams in providing health care to patients in a vulnerable population who have limited access to health care.

The Effects of a Certificate Program on Student Attitudes Regarding MTM Services. Gina M. Baugh, West Virginia University, Gretchen M. Garofoli, West Virginia University, Ashlee N. McMillan, West Virginia University, Tara R. Whetsel, West Virginia University, Travis G. White, West Virginia University. Objectives: 1) To determine if student attitudes regarding medication therapy management (MTM) would be affected by the addition of an MTM certificate program 2) To determine student perception of their level of preparation to provide MTM services. Method: The “Delivering Medication Therapy Management Services” certificate training program was added to the IPPE course for third-year Doctor of Pharmacy students in August 2013. At that same time, a survey regarding student perception of MTM services and confidence to provide these services was sent to students beginning their APPE rotations that had not completed the certificate training program (control group). The following year, the same survey was administered to the students that completed the certificate program prior to the start of their APPE rotations (study group). The survey was administered electronically and responses were measured using a Likert Scale (1 = strongly disagree to 5 = strongly agree). Results: Based on strongly agreeing with the survey statements, student perceptions of their ability to conduct a medication therapy review (31% vs. 27%) and bill for those services (13% vs. 5%) increased with the addition of the certificate training program. Students also had a more positive view of MTM services and the ability of MTM to advance the profession of pharmacy (88% vs. 62%) and improve patient outcomes (81% vs. 68%). Implications: Certificate training programs provide additional training and education that allow student pharmacists to feel better prepared to perform certain clinical tasks during their APPEs and future careers.

The Impact of Site Requirements on 2014-2015 P4 APPE Students. Nathalie D. Kocon, Wilkes University, Michelle R. Holt-Macey, Wilkes University, Edward F. Foote, Wilkes University. Objectives: Most APPE sites require students to provide documentation of background checks, drug tests, immunizations, etc. Requirements vary, as do the sites’ accepted timeframes for such. The Experiential office supports many of these submissions. However, these can be costly and time-consuming for students. The purpose of this research was to determine the financial and time impacts of fulfilling these requirements on students. In addition, we hoped to identify potential areas of improvement. Method: Seventy-one P4 APPE students were sent an email containing a link to an anonymous 11-question survey (surveymonkey.com). IRB approval and informed consent was obtained. Results: Forty-one students completed the survey. Students spent an average of 9 hours and $233 (above and beyond the background check paid for by the School for all students) fulfilling the requirements for their APPE rotations. Students were asked to rate their level of frustration with the pre-APPE requirement process with 0 being “not frustrated at all” and 10 being “very frustrated”. The average was 7. 68% of students had changes to their previously-stated site requirements during the year. The most common suggestions for process improvement from students include: covering cost in tuition, completion of all site requirements before starting the APPE year, and creating a standardized, comprehensive, requirements form accepted at all sites. Implications: Students must complete many requirements which can be costly, time consuming, and frustrating. Unfortunately, sites have differing and dynamic requirements and often mandate narrow timeframes for completion, which makes many student suggestions unviable. The School should assess for feasible improvements to implement.

Understanding Patterns of Preceptor Grading in Advanced Pharmacy Practice Experiences Using Multi-Facet Rasch Modeling. Jacqueline McLaughlin, University of North Carolina at Chapel Hill, Philip T. Rodgers, University of North Carolina at Chapel Hill, Charlene Williams, University of North Carolina at Chapel Hill. Objectives: The purpose of this study is to evaluate current grading patterns in advanced pharmacy practice experiences (APPE) and assess student ability in relation to preceptor severity and rotation difficulty. Method: A three-facet multi-facet Rasch measurement model (MFRM) analysis was completed to determine preceptor severity, student proficiency, and rotation type difficulty for all APPEs completed during the 2011-2014 academic years at the UNC Eshelman School of Pharmacy. In the initial analysis, 3,769 rotation grades were entered into the model with preceptors (n = 700), students (n = 440), and rotation type (n = 6) as facets. Lower and upper model fit control limits for this study were set at 0.5 and 1.7, respectively. Results: The MFRM model explained 75.06% of the variance in the data. Less than 10% of the preceptors in the final model (9%) had fit scores greater than 1.7, meaning that those preceptors assigned one or more grades to students that were surprising or unexpected. Preceptors used scores 94, 93, 96, and 95 to rate students the most frequently, at 9%, 9%, 8%, and 8% respectively. Student ability showed some variation with measures ranging from 1.62 to -1.93 logits and a reliability index of 0.87, suggesting that students were reliably separated. Rotation types ranged in difficulty from ~28 to ~20 logits, with Advanced Community as the easiest and Clinical Specialty as the hardest type of rotation. Implications: These data provide insight into grading patterns used by preceptors in APPEs. Additional preceptor training and rubric refinement could reduce construct-irrelevant variance and strengthen the model.
Usage and Recommendations Regarding Experiential Webpage on AACP Website: Results of Task Force Survey. Maryann Z. Skrabal, Creighton University, Keith DelMonte, St. John Fisher College, Robin M. Henry, East Tennessee State University, Lisa M. Meny, Ferris State University, Antonia Zapantis, Nova Southeastern University. Objectives: To determine current usage of and recommendations from experiential administrators regarding the AACP Experiential Education Section (EES) webpage. Method: The 10-question survey was piloted, peer-reviewed, and edited prior to administration. Experiential Administrators were emailed a link to a web-based questionnaire. Reminders were sent throughout the 3-week collection period during late fall 2014. Results: 242 responses were received. Usage: Over 61% have never accessed the EES website. When asked why, 64% did not know it existed, 55% were not sure what information was on it, and 28% did not know where to find it. Of those that had accessed it, 3.7 times was the mean number of times they accessed it and one-third accessed it 2 times (mode). Recommendations: Information respondents thought would be useful that is not currently on the website: preceptor development opportunities (83%), experiential literature publication or links (68%), listserv topics and contacts (50%), quality assurance information (50%), discussion board (42%), and membership list in excel or access (36%). Complete results including differences in responses found based on number of years in experiential will be presented. Implications: Quality experiential education and training are important to develop competent pharmacy professionals. Experiential Education faces daily challenges trying to meet these responsibilities, therefore; having tools and resources to help support these endeavors are important. The information obtained through this survey will be relayed back to Section leadership, as well as recommended changes to better match the needs of experiential administrators. Emphasis will be placed on increasing awareness and access of the webpage.

Theoretical Models

Application of an Entrustable Professional Activity Model in Advanced Pharmacy Practice Experience Assessment. Caitlin K. Frail, University of Minnesota, Scott A. Chapman, University of Minnesota, Jean Y. Moon, University of Minnesota, Amy L. Pittenger, University of Minnesota, Megan R. Undeberg, University of Minnesota. Objectives: To apply the entrustable professional activity (EPA) model to assess student performance on educational outcomes for advanced pharmacy practice experience (APPE) assessment. Method: The assessment of professional tasks and practice activities through the use of EPAs has been successfully implemented in medical education for assessing trainee preparation for practice. This EPA model is being applied to our pharmacy education to develop an assessment framework across the APPE curriculum. EPA course directors, practice faculty, and the Office of Experiential Education collaboratively defined a set of universal EPAs that are critical for pharmacists in any practice setting that will be assessed in all rotation types. Additionally, course directors have defined rotation type-specific EPAs unique to pharmacists working in ambulatory, acute, community, and institutional care. Results: Performance on EPAs will be used in two assessment approaches: individual preceptor assessment for APPE performance, and objective competency examinations of all students during the APPE year. Progress to acceptable level of entrustment for each EPA will be assessed by preceptors using a four-level scale with minimum levels of performance required. Universal EPAs will also be used to assess performance on an objective case-based performance examination to be administered mid-APPE year. Passing this examination is required for advancing to the remaining APPE blocks, and ultimately for graduation. Implications: It is anticipated that applying EPAs to two assessment strategies will clarify expectations for both students and preceptors. EPAs will also allow preceptors to translate assessment decisions based on activities students have demonstrated as a part of usual practice throughout the rotation.

Designing Student-Led Pharmacotherapy Sessions in Preparation for Experiential Learning and Pharmacy Practice. Annie Lee, University of Toronto, Edric Paw Cho Sing, University of Toronto, Michael Vinh, University of Toronto. Objectives: To design a peer-to-peer mentoring model with student-led pharmacotherapy review sessions to prepare students for the Advanced Pharmacy Practice Experience (APPE) placements and their subsequent licensing exam. Preceptors and students at a Canadian university indicated that reinforcing clinical knowledge prior to and during APPE placements is valuable to students’ learning experiences. Method: We conducted a literature review on APPE preparedness strategies in North American pharmacy schools and identified limited studies on the concept of student-led tutorials. Through collaboration with students via class surveys and focus groups, we acquired information regarding student interest, time commitment, student presenters, topics, dates and potential challenges and benefits of the student-led pharmacotherapy tutorials. Results: Fourth year students during their APPE placements led three 1.5-hour pharmacotherapy review sessions for third and fourth year students. Student presenters met with a student coordinator and faculty advisor to design each session. The content was reviewed by subject matter experts. The sessions were delivered live and simultaneously broadcast on-line. The presentation slides, resources, and audio/visual recording were also made available through the learning platform. Implications: The concept of peer and near-peer mentoring offers unique benefits to student presenters and participants. These sessions not only prepare third year students for their fourth year APPE placements, but also assist fourth year students in studying for their licensing exam. Challenges encountered are the availability of student presenters and timing of sessions. Future research will look at students’ perceived usefulness of these sessions for their APPE placements and licensing exam.

Development of a Faculty Facilitator Program to Increase Faculty and Student Communication during APPEs. Jeremy A. Hughes, Pacific University Oregon, Courtney M. Kraus, Pacific University Oregon, Michael E. Millard, Pacific University Oregon, Nora Garfias-Lopez, Pacific University Oregon, Rita Barton, Pacific University Oregon. Objectives: To describe the concept and implementation of a Faculty Facilitator Program designed to increase faculty involvement during students’ Advanced Pharmacy Practice Education year. Method: When students leave campus for experiential education, structured communication with faculty decreases, (including: check-ins, advising, and ensuring objectives are met). Faculty serve as preceptors for some rotations, but this only allows for interactions with small numbers of students. As an institution not associated with an academic medical center and with a relatively small number of faculty, increasing student/faculty interaction and communication is even more challenging. Literature review shows little research investigating how to increase student/faculty communication during the APPE year. A Faculty Facilitator program was developed to increase this communication and to improve APPE education overall. Results: A Faculty Facilitator program was implemented, to guide students during their APPE year. Practice faculty members serve as Faculty Facilitators for small numbers (between 4-8) of APPE students. Faculty Facilitators guide students, while identifying and tracking those at risk due to knowledge deficits, behavior, or life issues. The program also
identifies and supports successful students, and helps all APPE students to achieve stated learning and practice objectives. The program allows for student development to be communicated to students, preceptors, and the experiential team, and remediation is applied as needed. **Implications:** The use of Faculty Facilitators during the APPE year increases student communication with faculty and allows for enhanced detection of student issues, while providing additional layers of support for students, preceptors, and the experiential team.

**Measuring Worth of Effort: An Onboarding Value Analysis for Experiential Sites.** Teresa A. O’Sullivan, University of Washington, Kelsey M. Meyer, University of Washington, Erin Sy, Abesha Shiferaw, University of Washington, Stanley S. Weber, University of Washington, Curtis G. Jefferson, University of Washington. **Objectives:** Background: In May 2011, The Joint Commission issued a requirement for volunteers at health systems to go through the same procedures (termed “onboarding”) as newly hired employees. Because no category of “student” was offered, institutions began classifying student pharmacists doing experiential learning as volunteers. Onboarding requirements vary between institutions from little to onerous. At some point the amount of effort required by schools to onboard students may outweigh the benefit of student placement at that site. **Objective:** To estimate the point where the difficulty of onboarding a student exceeds the benefit of student placement at that site. **Method:** Identification and quantification of student placement benefits and difficulties at any given site were used to develop an equation measuring placement value. A formula (including measures of capacity ratio, student interest, site quality, site uniqueness, preceptor excellence, and onboarding effort complexity) was developed and applied to all core 2013-14 advanced pharmacy practice experience (APPE) sites. The cutoff number was 0, where a positive number indicated value in student placement while a negative number indicated that the difficulty of onboarding might exceed the benefit of student placement. **Results:** Of all core APPE sites with any kind of onboarding requirement, 59 had a score above 0 and 29 had a score below 0. Sites with a sub-zero score will undergo further review and possible discontinuation as a regularly-used site. **Implications:** Schools can measure whether a site’s onboarding requirements exceed the value of site placement and consider how to continue the site relationship accordingly.

**Pharmacy School Interprofessional Education Models Evaluative Comparison for the Future of Pharmacy Practice in California.** David Lopez, California Northstate University, Stefanie Stafford, California Northstate University, Kristina Pedersen, California Northstate University, Doan Trang Duong, California Northstate University, Tatevik Kirakosyan, California Northstate University, Rebecca Lemus, California Northstate University, Omi Patel, California Northstate University, Laura Smith, California Northstate University, David Pearson, California Northstate University, Cyndi Porter, California Northstate University. **Objectives:** The 2014 CAPSLEAD Team considered the following questions in the research study: what models currently exist at Colleges of Pharmacy (COP) / Schools of Pharmacy (SOP) in California; how do these models compare; and do they meet the standards set by ACPE? The primary focus of the research in this study uses existing data from COP/SOPs, and web information focused on interprofessional education, including a group that focuses on this type of training known as the IPE collaborative. The secondary component of the study includes a comparison of the COP/SOP IPE model data, proposed ACPE Standards 2016, and proposed practice training to meet future practice goals outlined in California’s Senate Bill 493 which advances the scope of pharmacy practice in California to a healthcare provider role. **Method:** Existing information published by the ACPE and CPhA were used to obtain this secondary data collection. The primary and secondary data collections were used to develop a focused IPE Model that can be adopted and used by COPs/SOPs to prepare students for the changing needs of pharmacy practice in California. **Results:** From our research, the components of this three stage model will prepare students to enter their pharmacy careers with the appropriate level of interprofessional health care knowledge to facilitate and help them to deliver and contribute to effective patient-centered healthcare. **Implications:** Health professions accrediting bodies, such as the Accreditation Council for Pharmacy Education (ACPE), are advocating for an increase of interprofessional education (IPE) and some are mandating implementation of IPE training into their health profession program curriculum.

**Promoting Interprofessional Education through a Fall Prevention IPPE Activity.** Gina M. Baugh, West Virginia University, Ralph Utzman, West Virginia University, Amy Burt, West Virginia University, Kimeran Evans, West Virginia University. **Objectives:** 1) To describe a service learning fall prevention project to promote interprofessional education 2) To assess student attitudes toward interprofessional education through course evaluations. **Method:** Student pharmacists partnered with OT, PT, and nursing students to provide weekly fall prevention screenings at an assisted living facility as part of a P2 service learning course. Student pharmacists provided medication assessments using the medical fall risk score and Beer’s List criteria. Students from the other disciplines provided apartment environment evaluations, balance testing, gait screenings, and blood pressure evaluations. Students met prior to the screenings to provide an overview of their discipline and discuss their role in the process. A majority of the screenings took place in one central location to allow continuous interaction. A survey was administered to all students using a Likert Scale (1 = Strongly Diagree to 5 = Strongly Agree) to assess their understanding of the IPE component. **Results:** A total of 88 students participated in the screening events (10 pharmacy, 39 PT, 38 OT, 1 Nursing). The student pharmacist pairs evaluated 14 of the 31 patients and provided recommendations for all patients, including change of medication, regular blood pressure monitoring, and ADL adjustments. 62% of the students strongly agreed post-encounter that learning with other health professional students will make them a more effective member of the health care team and 60% feel their communication skills were improved through shared learning. **Implications:** Interprofessional activities promote teamwork amongst health professional students while offering a benefit to community partners.

**Restructuring the IPPE Curriculum: A Longitudinal Profile Enhances and Equalizes Hours between Health-System and Community.** Jeremy A. Hughes, Pacific University Oregon, Courtney M. Kraus, Pacific University Oregon, Kristine B. Marcus, Pacific University Oregon, Michael E. Millard, Pacific University Oregon, Pauline Low. **Objectives:** To describe the concept and implementation of an IPPE curriculum expansion creating a longitudinal aspect and increased, non-simulated IPPE hours in a three-year program. **Method:** Meaningful IPPE experiences can be difficult to incorporate into a curriculum, due in large part to logistical issues. This can be more challenging for three-year programs and programs not associated with academic medical centers. A review of the literature did not identify satisfactory solutions. An innovative IPPE curriculum expansion with a longitudinal aspect was developed to improve the quality of IPPE education. Goals of the expansion were to: 1.) provide student off-site experiences earlier in the curriculum, 2.) increase total IPPE hours, 3.) balance the number of IPPE hours spent in health-system and...
community pharmacy, 4.) increase quality of student IPPE experience, and 5.) eliminate simulation in experiential courses. **Results:** An IPPE curriculum was redesigned to increase students’ total IPPE hours in both the community and institutional environments (to a total of 240 hours in each setting). A longitudinal aspect was added to community IPPE courses, with students at the same site (with the same preceptor) over three subsequent semesters. The program also places students off-site during their first semester. **Implications:** The addition of a longitudinal aspect to an IPPE curriculum and increasing non-simulated hours increases student preparedness for therapeutics based didactic classes and for APPEs. Benefits to the experiential sites include: decreased on-boarding and orientation efforts, increased student time at site, and increased ability of students to contribute by the end of the experience.

**Use of a Qualitative Research Method in Experiential Education Program Quality Assessment and Improvement.** Teresa A. O’Sullivan, University of Washington, Carmen Lau, University of Washington Medical Center. **Objectives:** Background: Schools and colleges of pharmacy are required to identify assessment measures of student learning and level of achievement. Assessment measures are frequently quantitative in nature, with examples being performance scoring on advanced pharmacy practice experiences (APPEs). Qualitative assessments can indicate a problem exists, but qualitative assessments are necessary to understand the nature of the problem. Objective: Use of in-depth interviews (IDIs) to identify student-perceived areas of excellence and areas needing changes in a new attending pharmacist model. **Method:** Methods: IDIs were conducted for the purpose of program assessment in February, 2014 with 14 out of 15 students who had completed an inpatient general medicine APPE using an attending pharmacist model. Thematic analysis of data from the interviews identified areas of success and areas needing improvement. Changes were made to the model to address areas needing improvement prior to the 2014-15 academic year. Students in the 2014-15 year were interviewed to determine if areas needing improvement were still apparent. **Results:** IDIs were conducted with 6 out of 16 students who completed the general medicine APPE using the attending pharmacist model in the 2014-15 year. Data from the IDIs didn’t identify the previous themes for needed improvement, indicating that the program changes implemented had likely improved the quality of the experience for the students. **Implications:** Implications: In-depth interviewing provides richly-descriptive data about the student APPE experience and is a useful tool for experiential education program quality assurance.

**LIBRARY AND INFORMATION SCIENCE Completed Research**

**Assessment of Student Performance and Perceptions of a “Pharmacy in the News” Assignment.** Robert D. Beckett, Manchester University, Shealey R. Todd, Manchester University. **Objectives:** To describe and assess an assignment designed to introduce students to the practice of staying current with emerging pharmacy-related information in terms of student performance and perceptions of learning. **Method:** Seventy-three first professional year students in a required drug information course subscribed to professional, pharmacy-related resources, of their choice, that provide regular e-mail alerts. Two to four students were randomly selected each week to verbally summarize an article of interest, and then follow up with a written report introducing the topic, summarizing the article, and postulating impact on practice. An anonymous, cross-sectional study assessing students’ perceptions of the assignment was conducted. Items were formatted as 5-point Likert scales; results were analyzed using descriptive statistics. **Results:** Median score was 18 +/- 1 of 20 points. Seventy-two students completed the survey (response rate 99%). Students agreed the verbal (median 4) and written (median 5) portions of the assignment enhanced their learning, and the assignment allowed students to better understand their topics (median 5). Students found the assignment more engaging (median 4), enjoyable (median 4), interesting (median 5), and relevant (median 5) compared to traditional term papers. Students agreed reviewing e-mails became a regular habit (median 4), they felt more involved in the profession (median 4), and they were more likely to stay current in the pharmacy profession (median 4) because of the assignment. **Implications:** The assignment effectively used student-centered learning to enable students to begin staying current with the profession. Results from this study will be used to guide future versions of the assignment.

**Comparison of Reading Levels of Pharmacy Students and Reading Level of Primary Literature.** Cathly H. Ficzere, Belmont University, Angela M. Hagan, Belmont University, Kayla Hill, Belmont University, Genevieve L. Ness, Belmont University, Anthony Blash, Belmont University. **Objectives:** The purpose of this project was to evaluate pharmacy students’ reading levels using and compare these results with the reading level of primary literature. **Method:** The NDRT was administered to first- through third-year student pharmacists. Vocabulary, reading comprehension, and reading rate were assessed. Grade equivalents (GE) were determined according to the NDRT manual. Demographic information was collected including: age, gender, race/ethnicity, primary language spoken and reading for personal enrichment (types, frequency). Twenty clinical trials from ten journals documented to publish the most patient-oriented evidence that matters (POEms) were assessed using the Gunning-Fogg Reading Score. A reading level was obtained for each article section (abstract, introduction, methods, results, and discussion) as well as an overall average. **Results:** One hundred students participated in our study producing an overall response rate of 49% (100/203). The mean NDRT total grade equivalent (±SD) was 16.95 ± 2.1 (median = 17.3). NDRT grade equivalents were statistically different for gender, ethnicity, ESL speaking respondents, and fiction readers. Education and the amount of time students read outside of school requirements were not statistically significant. The overall average Gunning-Fogg Reading Score for all articles was 16.53; however, the individual section averages ranged from 14.33 to 19.98. **Implications:** NDRT reading comprehension levels were comparable to the Gunning-Fogg Reading Score of selected primary literature. Certain sections of the articles had a higher score than the average reading level of students in the pharmacy curriculum. This is important to consider when instructing students to evaluate primary literature.

**Drug Information Teaching in the P1 Year.** Priya Shenoy, Drake University, Michelle M. Bottenberg, Drake University. **Objectives:** To describe a new teaching approach for P1 students on the practical skills of searching, finding, and evaluating a range of drug and medical information via blended learning. **Method:** Through a two semester period in a practical skills applications course, P1 students have one class and lab per semester where they are taught to evaluate content and information credibility on health websites and in medical apps, cite in AMA citation style, and how to use the Library website. The skills of searching drug information resources are evaluated through electronic formative and summative assessments through our learning management system, Blackboard. Different print and electronic drug information resources are introduced through biweekly homework assignments (formative assessments). Each assignment consists of
a YouTube video of the resource, a small paragraph on content and organization, and 5-8 questions. Summative assessment takes place each semester through a final exam. In the second semester, it is a high stakes exam that students must pass with a 70% completion rate and one opportunity to remediate. **Results:** YouTube video views were about 2/3rds the class size. Of the 109 students who took the summative exam, 6% failed with their first try (7/109). However, remediation and additional help was offered to all, but only 5/7 met with instructors for additional help. All 7/109 students passed the retakes. **Implications:** Grading, access, and communication were made easier by using Blackboard. We will continue to use Blackboard for its efficiency. The majority of students did well on the summative assessment.

**Evaluation of the 2013 AACP Core List of Journals for Pharmacy Education.** Robert D. Beckett, Manchester University, Rienne Johnson, Northeast Ohio Medical University, Skye Bickett, Philadelphia College of Osteopathic Medicine, Christina M. Seeger, University of the Incarnate Word. **Objectives:** To determine how the 2013 AACP Core List of Journals for Pharmacy Education (Core Journals List) is used and how it could be improved in advance of a 2016 update. **Method:** The Core Journals List serves as a collection of the essential periodicals recommended to support academic pharmacy programs, based on institutional mission and goals. A confidential, electronic survey was distributed to the AACP Library and Information Sciences Section listserver, the Special Libraries Association Pharmaceutical and Health Technology section and the Medical Library Association (MLA) Pharmacy and Drug Information member list. Questions were formatted as multiple choice items, rating scales, and short answer items. Descriptive statistics were used to analyze results. **Results:** Fourteen responders completed the survey. Most (93%) primarily work in academia; of those, 92% were at established pharmacy programs. Responders’ most common roles (non-exclusive) were librarian (57%), faculty (50%), and drug information specialist (36%). Seventy-one percent had used the Core Journals List in the past 12 months; 54% use it periodically and 39% use it annually. Responders primarily used the list for (non-exclusive) collection management (76%), accreditation (69%), and teaching (31%) purposes. Responders highly rated accessibility (median 3.5), relevance (median 3.5), reliability (median 3.5), usability (median 3), and visibility (median 3) on a 4-point Likert scale. **Implications:** Future efforts will focus on increasing visibility and usability of the Core Journals List and ensuring methods for the 2016 update yield a list that is relevant and reliable.

**Instructing Student Pharmacists to Analyze Direct to Consumer Advertisements.** Genevieve L. Ness, Belmont University, Robert D. Beckett, Manchester University. **Objectives:** To assess effectiveness of teaching methods for instructing pharmacy students to classify and assess direct to consumer advertisements (DTCA). **Method:** Pharmacy students from two universities, Belmont University (BU) and Manchester University (MU), completed a survey to assess baseline knowledge of DTCA. A lecture was presented to the students by professors at each institution using the following objectives: “Classify the 3 types of DTCA” and “Determine the appropriateness of a DTCA.” Corresponding activities based on Food and Drug Administration (FDA) educational materials were used to provide opportunity for practice. Following the lecture, students were asked to complete a post-survey. Questions were open-ended or formatted as 3-point Likert scales. **Results:** The pre-lecture survey response rate for BU and MU was 96% (64/67) and 74% (54/73), respectively. Responders were not confident in their ability to appropriately classify or assess different types of DTCA (median 1, interquartile range [IQR] 1 to 1). After class, the post-survey response rate for BU and MU was 92.5% (62/67) and 70% (51/73), respectively. All responders (100%) felt the lecture was valuable to their professional development. Responders felt more confident classifying the three types of DTCA (median 2, IQR 2 to 3, p < 0.001 compared to pre-) and determining the appropriateness of a DTCA (median 2, IQR 2 to 3, p < 0.001 compared to pre-) post-lecture. Performance on corresponding test items was consistent with student perceptions. **Implications:** DTCA may present false or misleading information. The activities used were effective in teaching students how to classify and assess DTCA, in terms of perceptions and performance.

**Longitudinal Drug Information and Evidence Based Medicine Training at a New School of Pharmacy.** Deirdre B. Fanning, Philadelphia College of Osteopathic Medicine, Skye Bickett, Philadelphia College of Osteopathic Medicine. **Objectives:** The objective of this study was to assess the methods used to teach students drug information (DI) and evidence based medicine (EBM) throughout the curriculum at a new school of pharmacy. **Method:** The Reference and Education Librarian and a Drug Information faculty member surveyed all pharmacy practice faculty and experiential educators. Experiential educators were identified through the Office of Experiential Education. **Results:** Forty-five preceptors responded to the survey, of which 9% were faculty. Clinical faculty indicated that DI and/or EBM skills are integrated into 1st, 2nd, and 3rd year didactic and laboratory courses. Instructors utilized textbooks, basic drug information compendium, clinical databases, medical guidelines, and original research articles when teaching these skills. During experiential training, the classification of the site is the determining factor for the frequency students were asked to retrieve drug information. In community or nuclear settings, preceptors indicated that students utilized basic drug information resources daily; however, students are not required to reference clinical databases or primary literature. Whereas the preceptors from clinical settings reported that students are required to reference and analyze clinical data, from either databases or primarily literature, at least weekly. **Implications:** DI and EBM are woven throughout the didactic and experiential curriculum for students. The data suggests, however, that preceptors would be receptive to school offered-workshops on these topics. Specifically, DI compendium for community preceptors and EBM workshops for clinical faculty and preceptors.

**Quantification of Database and Search Strategies to Identify Pharmacy Resident Publications.** Jill S. Nissen, St. Louis College of Pharmacy, Paul Stranges, St. Louis College of Pharmacy, Scott M. Vouri, St. Louis College of Pharmacy. **Objectives:** To identify the best databases and search strategies to find publications resulted from pharmacy residency research. **Method:** Previous research by the authors used a search strategy to identify pharmacy resident publications of projects presented in abstract form at the Great Lakes Pharmacy Resident Conference in 2003, 2005, and 2007. We sequentially searched: 1) Scopus, 2) International Pharmaceutical Abstracts (IPA), and 3) MEDLINE (PubMed). Within each database, sequential search terms were: 1) first author’s last name, 2) add author’s first initial, 3) add 3-5 key words from project title, 4) repeat for next investigator until publication was found. We identified 76 publications in pharmacy (n = 63) and non-pharmacy journals (n = 13). Similar research used EMBASE or Google Scholar to identify pharmacy resident publications. We aim to quantify number of identified publications found in Scopus, IPA, MEDLINE (PubMed), EMBASE, and Google Scholar, and the combination of databases required to identify all publications. Two researchers independently performed searches and disagreements were decided by consensus. **Results:** The proportion of published works were identified...
The Library’s Role in Assisting Researchers with NIH Public Access Compliance. Jesusano, University of Florida. Objectives: Demonstrates a library’s role in an institution’s compliance with the NIH Public Access requirement. Method: The library is in the perfect place to assist colleges and departments with increasing their compliance with NIH’s public access requirement. With support from the University’s Sponsored Research Compliance Office and the Health Science Center’s administration, the librarians created a multi-pronged approach to inform the faculty about NIH’s policy and the submission process. This approach included a guide on the library’s website, multiple in-person workshops for faculty and staff, and individual consultations and emails from liaison librarians informing faculty of the policy and the library’s services. Librarians were able, in a non-threatening atmosphere, to instruct the faculty and their staff on how to ensure their manuscripts are submitted to PubMed Central. Results: The urgent calls from investigators whose funding is being held up has decreased as compliance has increased. Departments that have had issues with noncompliance are contacting the library to have librarians speak at their faculty meetings about NIH’s rules and the manuscript submission process. Researchers are realizing that it is easier to make sure their manuscripts are submitted to PubMed Central before they are out of compliance and that librarians can help with the process. Implications: Because of their skills and knowledge librarians can find themselves more involved in the research funding process. Their knowledge of copyright and Pubmed Central make them an invaluable resource for grant seekers and administrators.

Time on Task and Student Performance with Medication Order Verification using a Hospital-based EHR System. Trovato, University of Maryland, Shannon R. Tucker, University of Maryland, Amy Ives, University of Maryland. Objectives: The objectives of this study were to collect and assess the total amount of time students spend on all EHR medication order verification activities and compare the average time spent on this activity to the student’s ability to correctly process medication orders. Method: This study was a retrospective analysis of existing EHR data logs showing the time students first accessed the patient’s chart during the simulated EHR order verification activity; time student completed processing the patient’s medication orders; total time spent on activity; and total patients accessed. Student performance was measured using their exam scores. Regression analysis using ANOVA was used to compare data endpoints. Results: Data was analyzed for a total of 160 students. Students who spent more time or accessed more patients in the EHR system did not perform better on the exam. On the contrary, students who spent less time on the activity or accessed fewer patients performed better. Regression analysis showed no association between total time spent on activity or total patients accessed and exam scores; p value = 0.19 and p value = 0.89, respectively. There was an inverse correlation for both total time spent on activity and total patients accessed compared to exam scores; r = -0.10 and r = -0.01, respectively. Implications: Although more time spent working in the EHR system is not predictive of better student performance, it may be able to identify students who have knowledge deficits related to tasks in the EHR system.

PHARMACEUTICS

Completed Research

A Modified Potency Test Strategy for IV Admixtures Prepared by Robotic Systems. Fang Zhao, St. John Fisher College, Vivek S. Dave, St. John Fisher College, Susan E. Hughes, Strong Memorial Hospital, University of Rochester Medical Center. Objectives: Robotic systems are increasingly used for compounding sterile IV admixtures. Gravimetric confirmation is currently the standard approach to verify robot accuracy. Attempts have been made with frequent failures to run potency tests by high-performance liquid chromatography (HPLC) methods. This study was initiated to develop a modified HPLC test strategy to verify robot accuracy. Method: Two robotic systems (i.v. Station™) were used to prepare IV bags for four representative drug products (n = 6). Two unique approaches were employed in the HPLC analysis. First, the HPLC standards were prepared from the source products rather than the pure drug substances. Second, the content of each bag was accurately weighed and converted to volume. Subsequent sample dilution and HPLC analysis were carried out following conventional practice. The passing criteria for the robotic systems were: (a) amount of drug in each bag was within 90-110% nominal value and (b) the 95% confidence interval (CI) of the mean is within 90-110% nominal value. Results: The new HPLC test strategy was executed, and both robotic systems met the passing criteria. For all products, the amount of drug in each bag ranged from 95.0 to 105.9% nominal value, and the 95% CI of the mean 93.2 to 107.5%. It was noted that all IV bags had between 9-18% overfill. This would have significantly skewed the potency data if not factored in the calculation. Implications: A modified HPLC potency test strategy has been developed, which provides an orthogonal method to the gravimetric confirmation for verifying the accuracy and reproducibility of IV robots.

Applying Metacognitive Strategies in the Classroom: Perspective From an Accelerated Pharmacy Program. Ashim Malhotra, Pacific University Oregon. Objectives: Developing goal-oriented, learner centered self-awareness of internalization of foundational science curricula constitutes a challenging, unmet need in pharmacy education. Our P1 students were encouraged to construct individual “learner CVs” based on self-identified reasons for delinquent performance on daily quizzes through a didactic course in Immunology at our accelerated pharmacy program. We share program design, assessment strategies, and challenges in implementing C.A.P.E sub-domain 4.1. Method: Pacific University School of Pharmacy offers a three year accelerated PharmD program. During this IRB approved project, students attended instructor initiated lectures, following which, comprehension and retention was assessed using quizzes. Upon completion, incorrectly marked answers were shared with the students. Subsequently, students were presented a “self-analysis” work document with an array of 6 questions about homework, pre-reading, notes taking, etc. to encourage self-reflection. Students self-scored each question with a maximum attainable score of 5 points, for a total score of 30 points. Moodle registered this score. The activity was repeated for each lecture session in the course. Results: Implemented over two courses, the activity showed positive correlation between students’ self-awareness of curricular knowledge, study habit, and self-assigned scores on the activity quizzes. Performance on quizzes increased with continued activity. A challenge was the lower number of students who liked the activity in spite of direct benefit to their scores. Implications: Metacognition can be successfully applied in the pharmacy classroom in an accelerated program and improves student performance. Developing a “Learner CV” incentivizes curricular engagement by highlighting ways of improvement.
Aseptic Technique Validation: Meeting Professional Standards in the Academic Setting. Angela V. Ockerman, Butler University. Objectives: To identify the most appropriate method for validating pharmacy students’ aseptic technique and preparedness to practice in USP <797> compliant environments. For the purpose of this study, appropriateness was both the ability to detect poor, potentially dangerous technique and also advancement of the institution’s educational goals within the financial constraints of academia. Method: 249 students were randomized to perform one of three aseptic technique validation processes, all requiring transfers of tryptic soy broth and manipulations necessary in the preparation of sterile injectables but differing in the number of transfers and the number of unique products used during the validation. The incidence of bacterial growth was compared between groups to determine if any one process produced a higher incidence of contamination. Participating students provided survey data to assess the potential educational value of the various validation processes based on the student’s confidence and attitudes related to their aseptic technique skill set. Results: Evidence of contamination was noted in 10 of the 249 products: 5 from the group with the most transfers, 3 from the group with the most products more closely simulating practice, and two from the group with the fewest transfers. Student survey data also indicated high educational value based on changed student perceptions in the high volume transfer group rather than the validation that most closely simulated practice. Implications: It is possible for academic institutions to use practice based tryptic soy broth validations to assess student aseptic technique while still having educational merit with minimum supply expenditures.

Capsule Compounding Skills Among PharmD Students: A Two-Year Longitudinal Study. Justin Taylor, Mudit Mudit, D’Youville College, Lloyd F. Alfonso, D’Youville College. Objectives: To longitudinally assess the development and retention of compounding skills among D’Youville student pharmacists by evaluating them at three time points in the PharmD curriculum; one semester before (first exercise), the semester during (second exercise) and one semester after (third exercise) they formally learn pharmacy compounding skills during regular laboratory coursework, long-term compounding skills among D’Youville student pharmacists by evaluating them at the first exercise, 93.75% during the second exercise and 75% during the third. Implications: In spite of being provided with the calculations/procedure during the pre-laboratory session, the students’ capsules showed the greatest variation in acetaminophen content during the first exercise probably due to improper compounding technique. After peaking during the second exercise, the compounding competency seems to have decreased during the third exercise. This appears to be mainly due to calculation errors as opposed to errors in technique. Therefore, while PharmD students readily develop compounding skills during regular laboratory coursework, long-term competency is affected by lack of retention of calculation skills.

Developing C.A.P.E.able Pharmacists: Mentoring Student-Led Career Development Workshops. Ashim Malhotra, Pacific University Oregon. Objectives: Active student engagement in developing a learner-centered, self-directed program in career development is an unmet need in pharmacy education. We implemented a student-led Book-Club using “The Pfizer Guide to Careers in Pharmacy”. Over six months, our P1 students presented from this book’s chapters, along with inviting specialized pharmacy experts to speak to their classmates. Our strategy enabled students to simultaneously gain insight into post-graduation career opportunities, and networking with professionals, while building C.A.P.E. domain 3.6 and 4.2. Method: 4 volunteer P1 students operationalized the “Career Guidance Book Club”. A sign-in sheet for P1 and P2 students interested in attending was designed. The “group of four” organized and led chapter-based presentations, once every month for 6 months on “Academic Pharmacy”, “Industrial Pharmacy”, “Community”, and “Retail Pharmacy”, and “pharmacy residencies in the retail setting”. This initiative received faculty support from the author, and school support from the Dean, who officially recognized the invited field experts. Following each session, a student survey instrument and a “Professions Quiz” was used to gauge qualitative factors such as student interest and acquisition of knowledge. Results: Students enjoyed learning from a peer-led effort, with greater than 90% respondents indicating that the activity be repeated for new P1 students. Similarly, students retained information, as suggested by the 90% average on the “Professions Quiz”. Implications: Peer led discussion of career opportunities, and opinions of experts in the field can help students improve communication skills and knowledge of the field.

Development of Alternative Acetaminophen Formulations for Pediatrics. Jason Knopp, Leon Le, Caitlyn Elmes, Sarah Baltzley, Abeer M. Al-Ghananeem, Sullivan University. Objectives: To formulate medicated gummies containing acetaminophen (APAP) and evaluate the effect of different parameters on drug release. Furthermore, to create a gummy formulation procedure that could be used in manufacturing as well as compounding pharmacies that would offer further opportunities to improve pediatric medication adherence. Method: Gummy formulations containing gelatin, sugar, water, methylparaben, and APAP were prepared at 70, 80, and 90°C, with APAP addition at 1 or 2 hours. The effect of 0.1, 1, and 2% crospovidone on drug release was also evaluated. In vitro release of APAP from gummies was evaluated in artificial saliva and tested on a spectrophotometer set at 250 nm. Total drug content of gummies was also determined. Results: Longer mixing time of APAP produced higher over drug release. Formulations prepared at 80°C released 75.4% or 71.4% APAP by 25 minutes from 1 hour and 2 hour formulations, respectively. The pattern of higher drug release with longer mixing time was consistent across all temperatures. As temperature increased from 70°C to 90°C, total APAP release increased. However, at 90°C, water loss occurred from the formulations, leading to artificially high drug content. Addition of PVP appeared to have some binding effect on APAP, with decreased drug release with increasing PVP content. Implications: Define the control steps in compounding a gummy formulation. Taking APAP as an example, we have defined the quality by design steps needed to produce a gummy that is stable and capable of delivering a therapeutic dose of acetaminophen.

Evaluation of the Effectiveness of In-Class Pharmaceutical Calculation Practice Sessions. Ningning Yang, Manchester University. Objectives: To be a competent clinical pharmacy practitioner, the accuracy of pharmaceutical calculations is crucial. Traditional teaching methods involve the in-class lecture material discussion followed by out-of-class assignments and tests. Several published studies have explored methods to improve the effectiveness of the pharmaceutical calculation courses. The aim of this study was to evaluate how in-class practice sessions could affect the instructional effectiveness toward
student performance in pharmaceutical calculations. **Method:** Exam performance on different types of calculations questions were analyzed to determine correlation with whether that question type was included in a practice session. Attendance at these practice sessions were also correlated with exam performance. **Results:** Exam performance reflected improved scores on question types which were included in practice session. Student attendance was also shown to affect the exam performance. Attendance of practice sessions improved exam scores of students who earned less than 80% as their final course grade. No significant difference was found between exam scores of student who earned greater than 80% as their final course grade. These results showed that in-class practice sessions effectively improved exam scores in students who most needed help. **Implications:** The use of pharmaceutical calculation practice sessions in a large classroom setting can enhance exam scores and overall course grade.

**HPLC Method Development for the Stability Determination of High-dose Insulin in 0.9% Sodium Chloride Solution.** Dayne A. Laskey, *University of Saint Joseph*, Holly Yin, *University of Saint Joseph*, Rajesh Vadlapatla, *University of Saint Joseph*. **Objectives:** High dose insulin has emerged as an effective therapy for significant medical conditions. Methods: The stability of high dose insulin solution in 50 mL 0.9% NaCl intravenous bags was examined. **Method:** 8 mL each of regular insulin from an insulin vial containing 100 units/mL was added to a sufficient quantity of 0.9% NaCl solution in polyvinyl bag to make a final concentration of 16 units/mL. Samples were withdrawn periodically and tested in duplicate for stability. The HPLC separation was achieved using a reverse phase C-18 column (250 mm x 10x4.6 mm, 3.5 µm) at 214 nm with a mobile phase of de-ionized water/acetonitrile (v/v 90:10) at a pH of 2.1 and a flow rate of 1.0 mL/minute. **Results:** A simple, rapid and sensitive HPLC method was developed for the determination of stability of high dose insulin solution in 50 mL 0.9% NaCl intravenous bags. **Implications:** The stability data obtained from this research will allow institutions to issue beyond-use-dating for IV fluids containing high dose insulin and used for treating patients of BB and CCA overdose.

**Implementation and Student Perception of a Prematriculation Program in a School of Pharmacy.** Eytan A. Klausner, *South College*, Beverly S. Hamilton, *South College*. **Objectives:** To describe the implementation and student perception of a prematriculation program in a school of pharmacy. **Method:** A 2-day prematriculation program, “Pharmacy Readiness & Enrichment Program” (PREP), was held the week before the first quarter for the Classes of 2016 and 2017. The objectives of PREP were to facilitate student transition into the PharmD program, and to review key concepts from students’ prerequisite knowledgebase. PREP concentrated on highlighting concepts that students are expected to know before they start the first quarter. PREP also contained sessions that focused on critical thinking and study skills. A post-PREP survey was administered to the students from both the Classes of 2016 and 2017. In addition, the Class of 2017 was surveyed regarding their perceived benefits of PREP in the middle of the first quarter. **Results:** Surveys of the Classes of 2016 and 2017 showed that most of the students (> 90%, n = 177) thought that the quality of PREP ranged from good to excellent. The quality of the individual sessions ranged from 77% to 98% of students rating them from good to excellent. Students from the Class of 2017 felt more comfortable during the first few weeks of the program. **Implications:** PREP has received favorable participant evaluations and has become a component of the student orientation program. PREP may prove to be an important segue for matriculation into the PharmD curriculum. Student surveys and faculty input will provide the foundation for future PREP enhancements.

**Integrating the Professionalism Assessment to the Compounding Lab Grading: Professionalism and Academic Performance Improvement.** Uyen Le, *Sullivan University*, Patrick Pham, *Sullivan University*, Khoi Nguyen, *Sullivan University*, Nguoc-Minh Ho, *Sullivan University*, Gopalakrishna Pillai, *Sullivan University*. **Objectives:** Our objective is to integrate the professionalism assessment to the compounding lab grading to enhance students’ professionalism and academic performance. **Method:** Five main categories of pharmacy student professionalism including attendance, punctuality, lab attire, respect, and responsibility were integrated to the grading of a 3-hour compounding lab course for the first year students. Per each category, student’s professionalism was scored 0, 1, or 2 depending on their performance. The professionalism assessment contributed to 10% of the total lab grade and was evenly distributed in ten weeks. To evaluate the influence of the integration to student professionalism, we conducted a survey to the students. To gain more insights into the students’ academic performance, we performed detailed analysis and comparison of the course evaluation and student grading. **Results:** Students obtained 98.3 ± 2.7% on the professionalism assessment. Seventy-one out of 76 (93%) students participated in the survey. The survey revealed that integrating the professionalism assessment into the compounding lab grading has significantly enhanced students’ awareness of professionalism and improved their professionalism. The study also demonstrated that the integration significantly improved students’ focus, performance, and outcome in the compounding lab. Importantly, the average compounding lab grade of the implemented one is 95.9 ± 2.8% which is significantly higher than that of the previous year (88.3 ± 4.6%) (p = <0.05). Finally, the course organization from the current year was positively ranked 100%, which was 14% higher than that of the previous year. **Implications:** Integrating the professionalism assessment to the compounding lab grading improved student’s professionalism and academic performance.

**Is Doctor of Pharmacy Students’ Incoming Math Ability Declining? A Four Year Analysis.** Michael A. Hegener, *University of Cincinnati*. **Objectives:** To assess incoming doctor of pharmacy (PharmD) students’ mathematics ability by content area over a 4 year period to determine if incoming ability is declining and identify areas that require increased emphasis in the curriculum. **Method:** A 37 question, short answer mathematics skills assessment was administered to 4 cohorts of PharmD students (2010-2013) during the first week of their first professional year. The math assessment was designed to cover the content of a traditional pharmaceutical calculations course and content areas included basic math, ratio, percent, metric system, conversion, dosage, flow rates, compounding calculations and milliequivalents. **Results:** 373 students (96.9%) completed the math assessment (96 in 2010, 84 in 2011, 96 in 2012 and 97 in 2013). The mean score was 65.3% ± 1.1% with no significant difference observed among the cohorts (p>0.05). Cohorts consistently performed highest in percentages (86.9%), basic math (80.9%), metric system (80%) and ratio calculations (69.8%). Areas in need of reinforcement included milliequivalents (11.2%), compounding
calculations (51.9%) and conversion (55.2%). The only category with a significant decline in incoming ability over time was conversions (p<0.01). **Implications:** The common perception that undergraduate math ability is declining over time was not observed. Although overall mean scores were < 70%, the assessment was designed to determine incoming ability and students were not expected to be able to solve all of the problems. Milliequivalents, compounding calculations and conversions may require increased emphasis in the PharmD curriculum, whereas percentages, basic math and metric system calculations may not.

**Multimedia-Based Tutorials and Clickers: Effectively Active and Reinforced Learning Approaches in Compounding Teaching.**

Uyen Le, Sullivan University, Cindy Nguyen, Sullivan University, Paul Dang, Sullivan University, Patrick Pham, Sullivan University, Khoi Nguyen, Sullivan University, Ngoc Minh Ho, Sullivan University, Gopalakrishna Pillai, Sullivan University.

**Objectives:** Our main objective is to show a combination of active and reinforcement learning approaches in compounding teaching significantly improves student’s learning performance. **Method:** Active and reinforced learning approaches using multimedia-based tutorials and TurningPoint clickers were implemented in the lab and didactic compounding teaching. The multimedia-based tutorials were customized for each lab and provided to the students for self-study and preparation. Contrarily, the clickers were used to reinforce the students’ concentration during lectures. The clicker’s response will contribute to 5% of the final grade of the students. We evaluate the effectiveness of the approach based on the students’ surveys and grades. **Results:** Ninety-two percent of the students (76 students) participated in the surveys. The result showed that the multimedia-based tutorials significantly facilitated students’ learning. Specifically, it showed that our tutorials using videos and pictures for illustration not only shortened studying time but also improved the understanding. Contrarily, the clickers reinforced students’ focus and concentration via clickers’ responses grading. Our study showed that students’ grades in the didactic compounding, 90.7±5.0%, were significantly (p<0.05) higher than those from the previous year, 81.5±2.3%, where we did not use the clickers. Finally, students’ positive evaluation on the course materials and teaching, 94.3%, was much higher than that of the previous years, 80-82%. **Implications:** Combining multimedia-based tutorials and clickers is an effective teaching method. Our study showed that the combined method not only fosters students’ active learning and participation, but also reinforces students’ focus and concentration that significantly improve their learning performance.

**Pharmacy Calculations as a Predictor of Performance in Pharmacokinetics.**

Christine R. Birnie, St. John Fisher College, Fang Zhao, St. John Fisher College, Jack E. Brown, St. John Fisher College.

**Objectives:** In an effort to identify at-risk students in selected curricular content areas, a retrospective study was conducted to determine whether a relationship exists between performance in the Pharmacy Calculations (PC) and Pharmacokinetics (PK) course content areas. **Method:** Exam grades were compiled from four years of first year students completing both the PC and PK content areas of the curriculum. A logistic regression model was developed to determine the predictive relationship between students receiving the same PC and PK letter grades. Descriptive statistics were used to describe the grades received in PC and those students receiving a grade at or above that in PK. All statistics were performed using SPSS software. **Results:** Grades were compiled from four classes of first year pharmacy students totaling 320 students. Analysis of compiled data revealed an overall very good predictive discrimination with an r-squared of 0.65 and p value of <0.0001 for students in the four compiled years. 77% of students with an A in PC received an A in PK, 76% with a B in PC received a B or above in PK, 98% with a C in PC received a C or above in PK and 55% of those who failed PC failed PK. **Implications:** A very good predictive relationship was observed between PC and PK course content, which provides a means to predict student performance. In future offerings, faculty may identify potential students at risk for poor performance in their course and provide additional means of support for the student.

**Stability of Commercially-Available Grape and Compounded Cherry Oral Vancomycin Preparations Stored in Syringes and Cups.**

Stacy D. Brown, East Tennessee State University, Paul Lewis, Johnson City Medical Center, Loren Kirk, East Tennessee State University, Yao Luu, East Tennessee State University.

**Objectives:** This research aimed to use a stability-indicating high performance liquid chromatographic (HPLC) method with ultra-violet (UV) detection for the beyond-use date determination of commercially-available grape and compounded cherry oral vancomycin preparations stored in oral dosing syringes and dosing cups at refrigerated temperature. Oral preparations of vancomycin are commonly compounded for the treatment of Clostridium difficile associated with pseudomembranous colitis and enterocolitis caused by Staphylococcus aureus. **Method:** The grape-flavored 50 mg/mL vancomycin oral preparation was prepared using the vancomycin in FIRST® - Grape solution compounding kit. The cherry-flavored 50 mg/mL vancomycin oral preparation was prepared by reconstituting to a vancomycin product intended for intravenous use in cherry syrup. Preparations were aliquoted into heat-sealed plastic dosing cups and capped oral syringes and stored in a laboratory refrigerator. Concentration of vancomycin was monitored over a 90-day period using HPLC-UV. **Results:** The concentrations of vancomycin in samples of the grape-flavored vancomycin product stored in syringes and cups and the cherry-flavored vancomycin product stored in syringes remained within the 90 – 110% of label claim throughout the 90-day study, indicating stability through 90 days. However, the concentrations of vancomycin found in the stability samples of the cherry-flavored vancomycin product stored in cups decreased to 87% of the label claim by day 90 of the study, thus indicating 60 day stability. **Implications:** This research has determined the refrigerated storage stability for two oral vancomycin products. This work could help pharmacy operations by allowing for bulk preparation of vancomycin-containing products and storage in an automated dispensing cabinet.

**Tablet Inside a Tablet Formulation Design of Ondansetron Immediate Release and Cyclophosphamide Sustained Release.**

Leah Johannes, Kathryn Trueblood, Sarah Petrone, Catherine H. Pham, Anne Lei, Nu Nguyen, Sarah Balzby, Abeer M. Al-Ghananeem, Sullivan University.

**Objectives:** The objective was to design a combination tablet with an immediate release (IR) antiemetic outer layer and a sustained release (SR) chemotherapeutic agent core to reduce pill burden and reduce nausea and vomiting. Thus, the effect of known disintegrants, starch and crospovidone, on drug dissolution was evaluated. **Method:** Tablets were designed with 8 mg ondansetron hydrochloride (OND) and 50 mg cyclophosphamide (CP) using starch (5, 25, and 50%) or crospovidone (0.5, 2, and 5%) as disintegrants in the IR outer layer. Tablets were tested for in vitro drug release over eight hours following USP recommended parameters in alkaline and acidic media. Drug analysis was performed using reversed-phase high-performance liquid chromatography (HPLC) with UV detection at 195 nm. **Results:** Starch and crospovidone in different proportions had little effect on the in vitro release of OND, although OND release followed a steady pattern of release. Dissolution of the outer layer
did affect CP release. 0.5% PVP at alkaline pH released 44.8% CP at 2 hours whereas 5% PVP only released 22.2% CP. Since the release of CP should be delayed to follow common therapeutic practice, larger amounts of PVP or starch, which limited CP release to less than 10% by 2 hours, would be recommended for a combination tablet. **Implications**: Overall, the results indicate the potential for an innovative combination tablet inside a tablet containing an IR antiemetic and SR chemotherapeutic agent to improve quality of life by reducing pill burden in cancer patients.

**Using Clinical Trial Simulations to Teach Pharmacy Students about the Drug Development Process.** Kacey Anderson, *University of Pittsburgh*, Hari Kalluri, *University of Pittsburgh*, Lawrence Kobulinsky, *University of Pittsburgh*, Randall B. Smith, *University of Pittsburgh*. **Objectives**: The drug development (DD) process is an important component of pharmacy education but is difficult to teach in a way that is interactive and meaningful for students. We redesigned a core course in the first year Doctor of Pharmacy program at the University of Pittsburgh to teach the DD process through highly interactive exercises involving sophisticated simulation and evaluated course performance. **Method**: Students worked in groups as part of a simulated clinical DD team. Students were asked specific questions about how they would design a Phase I clinical trial based on provided pre-clinical data. The output of each group’s trial design was predicted using simulation software and visualized in a healthy volunteer through the use of a patient simulator (SimMan 3G). The simulator was set to elicit life-like responses based on each group’s study design. Sessions were video recorded and evaluated using a pre-assigned rubric. Debriefing sessions were held to discuss the outcome of their trial design. Students were provided with simulated results of all subjects in their study and asked to calculate population pharmacokinetic parameters. **Results**: Overall, 89.7% of students reported liking the learning experience with this hybrid format of practicum exercises and simulation. Further, 98.1% of students felt using the patient simulator helped them gain a better understanding of first-in-human drug studies. Students felt more confident in their ability to interpret and evaluate an analysis. Further, 98.1% of students felt using the patient simulator experience with this hybrid format of practicum exercises and simulation significantly improved their evaluation of their level of understanding of key concepts. Future plans include oral team presentations. **Implications**: This case provides students with an opportunity to pair basic science topics to pharmacist skills, to broaden their view of patient care, and to apply previously acquired knowledge while working within a team.

**Theoretical Models**

**A Cross-Curricular Lab Experience for First Professional Year Students: A Patient Case-Based Approach.** Diane C. Rhodes, *Duquesne University*, Ira S. Buckner, *Duquesne University*, Jane E. Cavanaugh, *Duquesne University*, Jordan R. Covvey, *Duquesne University*, Vincent Giannetti, *Duquesne University*, Marc W. Harrold, *Duquesne University*, Jelena M. Janjic, *Duquesne University*, Joyce Kossol, *Duquesne University*, Rehana K. Leak, *Duquesne University*, Autumn L. Stewart, *Duquesne University*. **Objectives**: A cross-curricular case was created to provide students with a simulated patient-focused activity requiring teamwork, critical-thinking and problem-solving skills, and the application of knowledge from all other courses in the semester (Pharmaceutics, Biochemistry, Physiology, Law/Ethics, Pharmacy Administration, and Pharmacy Practice). The goal of this exercise was to link basic science concepts with pharmacy skills, nurture practice skills and advance student professionalism through the recognition of patient care from multiple disciplines. **Method**: The experience included 6-member student teams who reviewed a patient case drawn from the content of a concurrent Human Physiology and Pathology course. Students were required to investigate a disease state based on subjective and objective data followed by patient case questions stemming from medication formulation, drug database utilization, costs and payment options, legal/ethical concerns, and biochemical issues. The patient case was utilized three times in the semester, adding depth and new developments with each successive application. **Results**: Assessment of student learning was compiled from three sources: 1) team observation by teaching assistants and fourth professional year students as facilitators, 2) rubrics applied to written answers, and 3) pre- and post-case student questionnaires. Student feedback from observation of discussions was informal, instructional, and verbal. The questionnaires assessed student perceptions of their level of understanding of key concepts. Future plans include oral team presentations. **Implications**: This case provides students with an opportunity to pair basic science topics to pharmacist skills, to broaden their view of patient care, and to apply previously acquired knowledge while working within a team.

**Bridging Brain-Based Learning with Pharmaceutics Education.** Prashant J. Chikhalke, *South College*. **Objectives**: Our objective is to utilize and apply the theoretical foundation and framework of the brain-based learning principle in enhancing student engagement, critical thinking, and learning, to Pharmaceutics education. **Method**: Using the neuroscience-based principle of learning, we delivered a Pharmaceutics course, in which we incorporated a number of strategies to invoke and stimulate different brain regions and hence, to facilitate and enhance student engagement and learning. The methods utilized involved facilitated discussions, calculations, case-studies and group-activities on pharmaceutical products, their ingredients/excipients, dosage form categories and hence, the relevant and directly applicable, physical pharmacy, pharmaceutics and pharmaceutical dosage form design principles. **Results**: To enhance learning, appropriate areas of the brain need to be engaged and stimulated (Benaros et al. 2010; Ansari and Coch 2006; Sousa 2006; Goswami 2004). Consistent with these observations, we employed most contemporary, relevant, and integrated information regarding design of pharmaceutics dosage forms and products to highlight significance of the underlying physical pharmacy and pharmaceutics principles. We discuss how some of the above brain-based strategies employed possibly stimulate and enhance activity in brain regions responsible for efficient learning and draw connections with relevant observations from other studies (Romero et al. 2010; McLaughlin 2014). **Implications**: Such blend of methods and strategies could not only be effectively applied in the delivery of Pharmaceutics courses, but also, to facilitate learning and efficient delivery of other pharmaceutical sciences and pharmacy practice courses, and further could significantly improve overall and broad critical thinking skills of student pharmacists.

**PHARMACY PRACTICE**

**Completed Research**

**A Blended-Learning Immunization Activity Focused on Vaccine Administration and Safety.** Michelle M. Bottenberg, *Drake University*, Chasity Mease, *Drake University / Walgreen’s*, Anisa Fornoff, *Drake University*, Wendy S. Mobley-Bukstein, *Drake University*, Nora L. Steller, *Drake University*. **Objectives**: To compare student knowledge and confidence before and after a blended learning immunization activity that included an immunization skills checklist and administration technique practice. **Method**: Third year pharmacy students participated in blended-learning activities that included a podcast on immunization administration and safety, immunization technique videos, as well as cases and administration practice in the laboratory setting. Students completed a survey examining confidence and
knowledge of immunization administration and safety before and after the intervention. For administration practice, students injected a partner or a faculty member’s arm or used an injection dome. Students also practiced with intradermal and intranasal demonstration devices. An immunization skills checklist was emphasized and sections of the checklist were evaluated for student completion during a lab activity. **Results:** 101 students completed the pre and post assessments. 98 out of 101 students (97%) viewed the full vodcast. The average score of the pre-assessment survey to measure immunization knowledge was 71% compared to 84.2% on the post-assessment survey. Students’ average confidence improved from 3.7 to 4.2 based on a Likert scale of 1 to 5. The most commonly missed immunization skills checklist items included discussing management of side effects, and encouraging appropriate comfort measures and distraction techniques. **Implications:** A blended learning immunization activity allowed for students to increase their knowledge and confidence level with vaccine administration and safety. Implementation of an immunization checklist and additional administration practice was beneficial to student learning.

**A Critical Care Hybrid Online Elective Course: Comparison to Traditional Didactic Teaching Methods.** Matthew A. Wanat, University of Houston, Anne M. Tucker, University of Houston, Elizabeth A. Coyle, University of Houston. **Objectives:** To develop and implement a 2-credit-hour critical care pharmacotherapy hybrid online elective course for third year pharmacy students and assess its impact on student performance and learning outcomes compared to a traditional lecture based approach. **Method:** Critical care topics taught through a previously offered traditional lecture course (2011 and 2012) were modified into a hybrid online course utilizing video recorded lectures, supplemental readings including literature and guidelines, and post-lecture assessment quizzes via an online learning management system (2013 and 2014). Students met in class for skills labs to apply content to complex patient cases. Learning outcomes were assessed by comparison of examination scores with both teaching methods. Student evaluations and course feedback were also utilized. **Results:** A total of 105 students were enrolled in the critical care course from 2011 to 2014, with 54 students taking the course via the traditional lecture format in 2011/2012, and 51 via the hybrid online format in 2013/2014. Students enrolled in the hybrid online format scored higher on exams than students taking the traditional lecture format (mean 87.7% +/- 3.67 versus 82.6% +/- 6.3, p < 0.0001). The majority of students preferred the hybrid format over traditional format (80%, 8/10), and would recommend it to a peer (90%, 9/10). **Implications:** Students in a critical care elective course taught via an online hybrid format performed better on exams than students taught with traditional lecture. The college plans to utilize this teaching format for future didactic education.

**A Peer-Led Tutoring Program to Assist Students in Academic Difficulty in the Pharmacy Curriculum.** Angela O. Shogbon, Mercer University. **Objectives:** To evaluate the impact of a peer-led tutoring program on the academic performance of tutees in academic difficulty, and their perceptions of the program. **Method:** The Rho Chi Academic Honor Society at our College of Pharmacy provides peer-led tutoring to requesting students as one-to-one individual sessions to assist students in academic difficulty. Students are eligible for fee-paid tutoring if they are in academic difficulty, defined as a score less than 70% on an exam. Tutors are second through fourth professional year pharmacy student members of Rho Chi. Tutees’ performance on exams after each tutoring session was tracked to assess progress in the program. Tutees completed an online evaluation after each session to document perceptions of the session and for program improvement. Descriptive statistics was utilized to analyze the data. **Results:** A total of 54 tutees in academic difficulty participated in the individual tutoring sessions in 16 first through third professional year courses during the academic year. A passing score (70% or greater) was achieved in 51(80%) exams for which students were tutored. The mean(SD) change in exam score after each session was 12.6(13.0) points (out of 100 points). A total of 47(87%) tutees achieved a passing grade at the end of the course. Tutees reported that the sessions contributed to improved studying strategies (93%) and to their overall success in the course (95%). **Implications:** A peer-led individual tutoring program may improve the academic performance and study strategies of students in academic difficulty and serve as a useful tool for other schools of Pharmacy.

**A Pilot Study on Outpatient Physician Perceptions of Clinical Pharmacy Faculty Services in Louisiana.** Alexia E. Horace, The University of Louisiana at Monroe, Jennifer Smith, The University of Louisiana at Monroe, Jessica L. Johnson, Xavier University of Louisiana, Joseph M. LaRochelle, Xavier University of Louisiana, Aryn Karpinski, Louisiana State University Health Sciences Center. **Objectives:** Many studies have shown the value of clinical pharmacists as members of multi-disciplinary teams a variety of healthcare settings. Little is known about the perceptions of physicians regarding services provided by clinical pharmacy faculty. Clinical pharmacy faculty may have more teaching experience and time to create services compared to hospital-based pharmacists. Alternatively, these faculty must balance hospital responsibilities with university demands. The purpose of this pilot project was to assess the perceptions of outpatient physicians and clinical pharmacy faculty on a variety of pharmacy related services. **Method:** IRB approval was granted from the University of Louisiana at Monroe and Xavier University of Louisiana. An online survey was e-mailed to outpatient clinical pharmacy faculty at both institutions, and then forwarded to their physician colleagues. A 5-point Likert scale was used to assess expectations for 23 pharmacy services. Descriptive data was collected. Results were analyzed using descriptive statistics and an independent t-test. **Results:** Five physicians and nine outpatient pharmacists responded to the surveys. There were statistically significant differences between the two groups on the total survey score (t = 3.534, df = 12, p = 0.004). Outpatient physicians had a higher total score on the survey (M = 79.00, SD = 7.483), which favored more pharmacy services and higher expectations compared to outpatient pharmacists (M = 50.78, SD = 16.72). **Implications:** Study data conveys differences in perceptions between outpatient physicians and clinical pharmacy faculty on a variety of pharmacy clinical services. These differences will be further examined through a national survey.

**A Practice-Readiness Grand Rounds Course: Assessment of Pharmacy Students’ Attitudes.** Brandon Vachirasudleka, Touro College of Pharmacy—New York, Nataliya Shinkazh, Touro College of Pharmacy—New York, Suzanne Soliman, Touro College of Pharmacy—New York. **Objectives:** Standards 2016 emphasize the importance of practice-readiness of pharmacy students. The objective was to assess pharmacy student attitudes towards an innovative course designed to refresh, review, and reinforce foundational therapeutics topics to better integrate didactic and experiential curricula during the final professional year. **Method:** Fourth-year pharmacy students enrolled in a “practice-readiness” course were asked to complete an 18 question survey. The survey was divided into two sections: demographics and attitudes (measured via Likert 4-point scale). The students were surveyed after the seven session course (14-weeks total). Each session required students to self-study a specific clinical subject (or subjects), return to campus from advanced pharmacy practice experiences (APPEs) to attend a 90 minute review session with faculty,
A Retrospective Assessment of Progression and Remediation Standards on First-Time NAPLEX Pass Rates. Nataliya Shinkazh, Touro College of Pharmacy-New York, Thomas J. Cook, Touro College of Pharmacy-New York, Suzanne Soliman, Touro College of Pharmacy-New York. Objectives: To assess the application of new progression and remediation policies to previous class cohorts and their implications on first-time NAPLEX pass rates. Method: Through an institutional review, progression and remediation policies appeared to be one factor contributing to unsatisfactory NAPLEX pass rates at a new College of Pharmacy. Upon revision and strengthening of the policies, a retrospective analysis applied new policies to investigate the potential impact on first-time NAPLEX pass rates. Results: Students who received >3 course grades of <70% would have now repeated the respective coursework, or been dismissed. Students who received any course grade <70% would have now remediated the respective coursework. First-time NAPLEX pass rates were assessed for two class cohorts (2013 and 2014) to determine if the pass rate was impacted by previous policies. An institutional review board exemption was granted. Implications: Progression and remediation policies can help to early identify students who may struggle with passing the NAPLEX. Applying strengthened policies to previous class cohorts yielded a significant correlation with improved NAPLEX pass rates. Further study is necessary to determine what other factors may have contributed.

A State-Wide Pilot Survey of Inpatient Physician Perceptions of Clinical Pharmacy Faculty Services. Jessica L. Johnson, Xavier University of Louisiana, Joseph M. LaRochelle, Xavier University of Louisiana, Alexis E. Horace, The University of Louisiana at Monroe, Jennifer Smith, The University of Louisiana at Monroe, Aryn Karpinski, Louisiana State University Health Sciences Center. Objectives: Clinical pharmacists provide a variety of clinical services as members of multi-disciplinary health care teams. In comparison to hospital-based clinical pharmacists, clinical pharmacy faculty members may have more flexibility and broader teaching experience, but may also have responsibilities as a faculty member, such as didactic teaching, experiential precepting, and university commitments, that may alter their ability to provide consistent services. The purpose of this pilot project was to compare the perceptions of physicians and pharmacy faculty working on multi-disciplinary inpatient teams to gain a better understanding of expectations for services provided and views on unmet needs. Method: We received IRB approval from both the University of Louisiana at Monroe and Xavier University of Louisiana to administer an online survey to all inpatient clinical pharmacy faculty employed at either university. Each faculty member identified a physician with whom they work closely to take the corresponding physician survey. Respondents ranked agreement with their expectations for 24 clinical pharmacy services on a 5-point Likert scale. Results were analyzed using descriptive statistics and an independent t-Test. Results: Four physicians and nine pharmacists practicing in inpatient settings responded to the surveys. Inpatient physicians had a higher mean total score on the survey compared to inpatient pharmacists (101.75 vs. 87.56, p=0.019), indicating physicians were more likely to agree that the various clinical services were expected or necessary. Implications: This state-wide pilot survey identified interesting discrepancies between physician and clinical pharmacy faculty perceptions of expected clinical services. These differences will be elucidated further in a national survey.

An Elective Course on Spanish for Pharmacy Professionals. Robert Mueller, Concordia University Wisconsin. Objectives: To design and evaluate an elective course that integrates patient education and medication list retrieval with Spanish language skills and applies them to simulated Spanish-speaking patients. Method: This elective met twice weekly in fifty minute periods for one semester. Quizzes were delivered prior to several lectures. Lectures outlined Spanish vocabulary and grammar relevant to patient education or medication list retrieval and allowed students to practice providing these skills in Spanish. Examinations assessed reading, listening, writing, and speaking Spanish (either providing patient education or retrieving a medication list) in contexts relevant to pharmacy practice. Rubrics used in other courses to evaluate patient education and medication list retrieval were modified to include additional criteria for appropriate use of Spanish and cultural competency. Pre/post course surveys and competency examinations were used to evaluate completion of course outcomes. Results: Student grades were determined by several elements: quizzes and assignments, participation and attendance, examination scores, and an objective structured clinical examination (OSCE). The four students enrolled in the course had an average quiz score of 86%, and average examination score of 92%. Pre/Post competency examination and survey results indicated successful completion of course objectives. The average competency examination score was 62% prior to course registration, which increased to 81% after course completion. Implications: This elective was an innovative approach to integrating previously learned knowledge and skills with Spanish skills and cultural competency. Successful attainment of course goals and objectives were demonstrated through course surveys, quizzes, assignments, examinations, and an OSCE.

An Eleven Year Retrospective Descriptive Review of a Progress Exam at the Dalhousie College of Pharmacy. Anne Marie Whelan, Dalhousie University, Susan Mansour, Dalhousie University, Dianne Cox, Dalhousie University. Objectives: When Dalhousie College of Pharmacy implemented a problem-based learning curriculum in 1997, comprehensive, cumulative exams were eliminated. An annual progress exam (100 multiple choice questions) was implemented with the new curriculum. This review examined the achievement of the long term objectives for the progress exam. Method: Progress exam objectives for students were to demonstrate their 1) overall performance; 2) knowledge acquisition; 3) knowledge retention; and finally, 4) to provide an opportunity to write comprehensive, cumulative exams prior to writing nationals Board examinations. Objectives for the curriculum included:

and complete a high-stakes examination. Descriptive statistics were used to analyze this survey and an institutional review board exemption was granted. Results: Approximately 95% (n=89) of students responded to the survey, 72% were female. Seven “readiness” classes were held: calculations, cardiology, diabetes, psychiatric, heart failure, infectious disease and HIV. Ninety-nine percent strongly agreed or agreed the course helped reinforce knowledge in foundational therapeutic topics, and 97% indicated the course enhanced confidence level in APPEs. Approximately 95% strongly agreed or agreed that the course improved skills in providing optimal patient care in the direct patient care setting. Implications: A course aimed at reinforcing knowledge in foundational therapeutic topics and integrating didactic and experiential learning was successfully implemented and well received by pharmacy students. Future assessment related to topic areas and practice-readiness tests may be beneficial.
committee were to examine results for trends in knowledge acquisition and retention. Annual mean scores on the entire exam (Classes of 2005 to 2014) and on the 4 major subject areas of biomedical sciences, pharmaceutical sciences, pharmacy administration and clinical pharmacy (Classes of 2009 to 2014) were collated and reviewed. Results: Mean scores on the exam increased from years 1 through 3 for the Classes of 2005 to 2014; however scores in 4th year were similar or slightly lower to year 3. Performance in biomedical science was highest in year one and then dropped. Mean scores in pharmacy administration tended to be highest in last 3 years of the curriculum. Pharmaceutical science and clinical pharmacy scores increased after Year 1. Implications: Findings indicate students’ knowledge did improve over time; however, not consistently in all the content areas. The Curriculum Committee is using review findings to inform the development of the Doctor of Pharmacy Program and determine the future role of the progress exam.

An Evaluation of a Tabletop Emergency Preparedness Exercise for Pharmacy Students. Adam Pate, The University of Louisiana at Monroe, Jeffrey P. Bratberg, The University of Rhode Island, Courtney Robertson, The University of Louisiana at Monroe, Gregory W. Smith, The University of Louisiana at Monroe. Objectives: To describe the implementation and effects of an emergency preparedness activity on student knowledge and perceptions. Method: A disaster response tabletop lab activity using three unique infectious disease scenarios was created by investigators. Pre- and post-surveys assessed effect on knowledge, willingness to participate in emergency preparedness training, current level of preparedness, and importance of a pharmacist’s role in disaster response. The post-survey also assessed perceptions of the activities success accomplishing specified ACPE appendix B outcomes. Results: 98 and 79 students completed pre and post-surveys, respectively (response rate 87% and 70%). Comparing pre- and post-survey knowledge scores using an unpaired t-test demonstrated an insignificant increase in mean respondent score on the 3 knowledge questions 73.9% vs 74.9% (p=0.7). 67 respondents (85%) agreed or strongly agreed the activity increased their knowledge and was helpful. Mean likert scale responses (0 to 10 scale) were compared using the Mann-Whitney U test. Average willingness to participate in emergency preparedness training increased from 7.1 to 7.3 (p = 0.3). Current level of preparedness was 3.5 and 4.1 (p = 0.08). Perception of the importance of a pharmacist’s role (1 strongly disagree to 5 strongly agree) decreased from 4.5 to 4.0 (p=0.3). The top 3 perceived competencies accomplished were problem solving, management principles, and planning/organizing/controlling resources. Implications: This activity demonstrates a way for students to apply didactic concepts; showing that students can learn and be introduced to emergency preparedness while assessing concepts from multiple courses.

An In-Class Research Project to Teach Fundamentals of Conducting Research; Breaking Away from the Traditional Lecture. Matthew A. Wanat, University of Houston, Dhaza Shah, University of Houston, Kevin W. Garey, University of Houston. Objectives: Doctor of Pharmacy students at the University Of Houston College Of Pharmacy receive a didactic lecture on fundamentals of research design and professional writing in a Drug Information and Research course during their P1 year. However, research concepts may be best taught best using active learning versus traditional lecture. Our objective was to utilize active learning via an in-class research project to teach students fundamentals of research and professional writing in a novel, interactive format. Method: Students were provided the previously delivered lecture as a PowerPoint download for their own reference, and key concepts of research and professional writing were covered over the first 15 minutes of lecture. The last 95 minutes of class were utilized answering the following research question posed to the students - what does pharmacy education consist of around the world? Students were each assigned a different county, and answered research questions using keyword searches, MeSH terms and different literature sources. Students recorded their answers on a standardized data collection tool and results were tabulated in Qualtrics, and descriptive statistics were presented for each category. Results: A total of 122 (97.5%) students completed the research project. Students strongly agreed they were able to describe the publication process and structure of biomedical literature, (mean 4.7/5) and research methods and study designs (mean 4.7/5). Implications: An in-class research project to teach fundamentals of research and professional writing was beneficial to student learning. We will continue to look for novel ways to incorporate active learning throughout the curriculum.

An Interprofessional Active Learning Approach to Cultural Competency. Amy Kennedy, The University of Arizona, Elizabeth Hall-Lipsy, The University of Arizona. Objectives: The Center for the Advancement of Pharmacy Education 2013 Educational Outcomes include cultural sensitivity components. Suggested learning objectives include: demonstrating an attitude that is respectful of different cultures, and safely and appropriately incorporating patients’ cultural beliefs and practice into health and wellness plans. Model curriculums and programs exist across health professions and educational research suggests that interventions and innovations for teaching patient centered culturally appropriate care should be implemented throughout curricula from didactic to experiential learning. Method: This project assessed the impact of two interprofessionally taught sessions on cultural competency knowledge for first year PharmD students. The first session focused on the importance of cultural competency for health care outcomes, costs, and legal and regulatory compliance. The second presentation focused on patient centered applications and included active learning exercises using patient case examples. Assessments included a pre-course survey and a retrospective pre/concurrent post course survey. Results: Ninety-nine students completed both the pre and the retrospective pre/concurrent post assessment surveys. Differences in results were evaluated across demographic factors, specifically age and ethnicity. Moreover, students overestimated their understanding of cultural competency reflected by the differences in their pre course assessment responses compared to the retrospective pre course survey. Implications: Introducing cultural competency concepts, making the case for cultural competency, and applying cultural competency principles to patient case examples should be implemented in the first year and reinforced throughout the pharmacy curriculum. Although students overestimate their cultural competence, changes in student perceptions can be observed using retrospective pre and concurrent post assessments.

Analysis of “Habits of Mind” Cultivated Via Curricular Threading through Skills Labs and APPEs. Laurie B. Briceland, Albany College of Pharmacy and Health Sciences, Teresa H. Kane, Albany College of Pharmacy and Health Sciences, Cindy Jablanski, Albany College of Pharmacy and Health Sciences. Objectives: In recognition of the importance of the affective domain, the CAPE 2013 curriculum outcomes were expanded beyond foundational skills/knowledge to emphasize personal/professional development of “Habits of Mind” (HOM), including self-awareness, leadership, innovation/entrepreneurship, and professionalism. We included instruction on HOM throughout our curriculum, and report the findings from a series of student reflective exercises. Method: For 2014-15, P1-P3 students in Pharmacy Skills Labs (PSL) and P4 students in APPEs were introduced to 16 HOM and their importance in student pharmacist professional development.
For each of six APPEs and for two pre-determined exercises during each of six PSL courses, students selected one HOM and documented in two sentences of reflection how the HOM was cultivated during the particular curricular offering; reflections were entered either in Blackboard LMS or RxPreceptor for collateral. Results: For Fall 2014, across two campuses, each of 681 students in P1, P2, and P3 collectively completed two HOM reflections (1362 HOM reflections) and each of 238 P4 APPE students completed up to five HOM reflections (1190). Each of 16 different HOMs were reflected upon in both PSL and APPEs; the most commonly reflected HOM for P1 and P2 was striving for accuracy; P3: empathy; and P4: thinking/communicating with clarity/precision. Implications: Through curricular threading, students are continuously and frequently sensitized to the importance of cultivating the affective domain as part of their professional development. Our rich and robust database of HOM reflections details student growth in the affective domain as a result of curricular offerings in PSL and APPEs.

Analysis of Student Challenge Data from Objective Structured Clinical Examinations. Phillip Lee, Auburn University, Amber M. Hutchison, Auburn University, Erika L. Kleppinger, Auburn University. Objectives: To evaluate the frequency of student-challenged objective structured clinical examination (OSCE) station scores and how often those challenges resulted in a grade change. Method: OSCEs are administered in each of six semesters of a skills laboratory course sequence. Analytical checklists and rubrics are utilized to score students on skill ability and communication. Since stations are graded live by trained standardized patients and not pharmacists, students are allowed to challenge station grades after reviewing their scored checklists. If a station is challenged, it is reevaluated by a pharmacist. Data including number of students challenging, number of stations challenged, individual station grade changes, and final course grade changes were collected from three semesters of OSCEs. Data were analyzed for challenge rates, grade change rates, and final grade changes. Results: During the time period, 1,287 students participated in 6,114 OSCE stations. It was found that 10.64% (137/1,287) of students challenged 4.19% (256/6,114) of total stations. Challenges resulted in skills checklist changes and communication rubric changes 69.14% (177/256) and 10.16% (26/256) of the time respectively. Challenges lead to negative changes to checkpoints in 23.65% (48/203) of cases. Of the students who challenged, 28.47% (39/137) had a final course grade change. The overall percentage of final course grades changed as a result of the challenge process was 3.03% (39/1,287). Implications: A relatively low number of students challenged station grades. The challenges requested resulted in a substantial number of station grade changes and a lower but considerable number of changes to final course grades.

Are Digital Natives Using Technology to Learn? Margarita V. DiVall, Northeastern University, Alexander Fairhurst, Northeastern University, Amanda Atherton, Northeastern University, Deena Magdy, Northeastern University. Objectives: Our objectives were to evaluate pharmacy students’ utilization of technology and tools available for educational purposes, and to determine the impact of a workshop on their knowledge and utilization of available tools. Method: P2 students were surveyed about available technology and utilization of tools and apps for educational purposes. A 1-hour workshop was conducted to expose students to available apps for organizing information, studying, collaboration, and clinical references. Post workshop evaluation was conducted to determine whether information received will impact utilization of technology for educational purposes. Results: Needs assessment survey (N = 123, 95%) demonstrated that despite of having laptops (100%), tablets (40%), and smart phones (97%), only a third of students used technology for taking notes, reading textbooks, or organizing themselves. Paper notes and study materials were used for studying by 74% of students. Major barriers reported by students for using technology for educational purposes were looking at the screen for long time periods (69%), having preference for paper (69%) and awkward workflow (35%). While 72% reported that they were familiar with apps to assist them with studying, 60% were interested in attending an informational workshop. All workshop attendees (N = 37) found the presentation engaging, useful and well organized. Majority of the students stated they will increase their use of digital notes, flash cards, and organizational tools after the workshop. Implications: Faculty face pressures to adjust their teaching strategies for the digital learners; however, many students do not use available technology for educational purposes and may need to be informed about available tools and apps.

Are Rural Community Pharmacies Effectively Serving Community-Dwelling Elderly with Alzheimer’s Disease in the U.S.? Marketa Marvanova, Chicago State University, Paul Henkel, University of Eastern Finland. Objectives: This study investigated whether rural community/retail pharmacies in high-elderly areas are better able to provide services, counseling and medications for persons with Alzheimer’s disease (AD) and dementia than peers in low elderly areas. Method: Retail pharmacists (N = 990) in three rural areas across five states (ND/SD/CA/OR/WV) were interviewed via telephone to collect information on immunizations offered, pharmacist knowledge, and in-stock availability of cognitive enhancers for treatment of persons with AD and dementia. Census data was used to classify areas as low- or high-elderly. Logistic regression analyses were performed. Results: Pharmacies in high-elderly areas were no more likely to offer immunizations, but if they did, were more likely to offer pneumococcal (P < 0.001) but not zoster. Regarding side effects of donepezil 10mg tablet, pharmacists in high-elderly areas were more likely to name diarrhea (P < 0.05) and insomnia (P < 0.05) but not nausea, vomiting, or lower heart rate/blood pressure. Most pharmacists were unable to name more than one side effect. Pharmacists in high-elderly areas were 45 percent (non-significant) more likely to make an inappropriate recommendation (i.e. anticholinergic) for sleep aid for a person using rivastigmine patch. All cognitive enhancers were more likely to be in-stock in high-elderly areas, though not significantly so. Implications: Pharmacists are tasked to provide quality pharmacy care for populations they serve. And there is impetus to provide more services and counseling alongside dispensing. With regard to high-elderly areas, medications stocking for AD appears responsive to population need. Pharmacy services and particularly pharmacist knowledge are notably less responsive to high-elderly area populations. Further research is planned.

Assessing Students’ Knowledge and Perception Regarding Transitions of Care through a Pharmacist-Focused Simulation Activity. Aimon C. Miranda, University of South Florida, Erini S. Serag-Bolos, University of South Florida, Radha Patel, University of South Florida. Objectives: Transitions of care (TOC) occur at many levels and span the entire spectrum of healthcare. Pharmacists are currently underutilized during TOC, yet have the potential to enhance the process and improve patient outcomes. Due to limited training opportunities to prepare pharmacy students for these practical endeavors, the objective of the TOC simulation was to assess the change in students’ knowledge and perceptions of the various roles of pharmacists in care transitions. Method: A TOC simulation was developed to highlight the pharmacists’ roles in various practice settings including inpatient, ICU, emergency department, and ambulatory care. Third year pharmacy (P3) students were surveyed prior to and following the two-hour simulation.
to assess changes in their knowledge and perception of pharmacists’ roles. Results: Fifty-one P3 students participated in the simulation that was held at the University of South Florida Center for Advanced Medical Learning and Simulation (CAMLS). Students’ knowledge regarding the pharmacist’s role in risk reduction of inappropriate medication use increased from 89% to 92%, interdisciplinary programs from 94% to 98%, and involvement with health information technology from 87% to 90% after completion of the simulation. Perceptions of roles in medication reconciliation did not change. Implications: The transitions of care simulation enhanced students’ understanding of the various pharmacist roles in common practice settings and will be utilized in subsequent semesters with increasing complexity, including the addition of electronic medical records and an interprofessional component. Such simulations will enrich students’ knowledge of individual roles and refine communication skills to ensure continuity of care in an interdisciplinary team.

Assessing the Impact of Using Video to Provide Feedback on Written Assignments. Amy Wilson, Creighton University, Zara Risoldi Cochrane, Creighton University, Darren Hein, Creighton University, Philip J. Gregory, Creighton University. Objectives: Due to the time burden associated with grading, use of written assignments has decreased in the Doctor of Pharmacy curriculum. In order to minimize faculty grading time while maximizing the usefulness of feedback on written assignments, video-recorded feedback was piloted in a Literature Evaluation and Drug Information course. Method: Multiple graders are used to assess written formulary monograph and drug information consultation assignments. Rubrics are used to maintain consistency among graders. During the study period, students were randomized to receive either traditional feedback using written comments (n=99) or video feedback through recorded, personalized messages (n=74). Graders tracked time spent grading each assignment. Time spent grading each assignment was ranked and compared using the Mann-Whitney test. In addition, all students were surveyed with regard to their perceptions of the feedback received. Results: Average faculty grading time for traditional and video feedback was 28 minutes and 14 minutes, respectively. Mann-Whitney mean rank grading time was significantly lower for video vs. traditional feedback (p<0.001). No significant differences in perception of the value of feedback were identified between the groups. The majority of students did not report a preference between receiving written or video feedback comments. However, more students receiving video feedback reported feeling comfortable approaching an instructor to discuss further. Implications: Use of video feedback was shown to significantly decrease the amount of faculty time needed to grade written assignments without decreasing student satisfaction. Use of video feedback may allow for the use of written assignments in the curriculum without significantly adding to faculty workload.

Assessment of Foundational Knowledge Retention from PY3 to PY4 in a Problem-Based Learning Curriculum Structure. Daniel M. Riche, The University of Mississippi, Kim G. Adcock, The University of Mississippi, Shirley M. Hogan, The University of Mississippi, Katie S. McClendon, The University of Mississippi. Objectives: Prior the advanced pharmacy practice experiences, our third year pharmacotherapy course series is taught in a problem-based learning format through small group sessions. This study was intended to determine baseline knowledge on foundational topics prior to PY3 and the progression of knowledge attainment and retention up to graduation. Method: A longitudinal, single-blind, prospective study of Class of 2011 students in both semesters of PY3 and PY4 was conducted. Assessments consisting of 30 multiple choice questions were administered. Questions were designed to test knowledge of basic physiology, pathology, drug information and therapeutic scenarios in topics defined as foundational by investigators. An identical assessment was administered at each testing session. The assessment was repeated with PY3 student in the Class of 2012. Comparisons of performance at each testing session were analyzed via t-tests. Data are reported as means. Results: There were a total of 60 Class of 2011 students and 72 Class of 2012 students completing all testing sessions. The mean scores for the first testing session (baseline) was 60.5% [Class of 2011] and 59.6% [Class of 2012]. Baseline scores did not differ between classes (p=0.61). For the Class of 2011, scores increased to 76.5% at the end of the Spring semester (p<0.01) and remained similar during the PY4 semesters (74.2% and 76.4%; p>0.1 for both). For the Class of 2012, scores increased to 70.8% at the end of the Spring semester (p<0.01). Implications: Knowledge in foundational topics increases during PY3 and appears to be retained through to graduation in a problem-based learning curricular structure.

Assessment of Professionalism Prior to Implementation of a Co-Curricular Professional Engagement Program for Pharmacy Students. Maria M. Thurstor, Mercer University, Annessha W. Lovett, Mercer University, Rebecca N. Burns, Mercer University, J. Grady Strom, Mercer University, James W. Bartling, Mercer University, Candace W. Barnett, Mercer University. Objectives: To assess baseline professionalism among pharmacy students prior to implementation of a co-curricular professional engagement program. Method: A program to foster and promote professional attitudes and behaviors was developed involving first through fourth year students (n=632). Professional development networks were restructured to support the initiative. Student expectations consisted of involvement in five key professional areas with required and elective activities: development, seminars/events, involvement, community service, and leadership, in addition to a written reflection/projection. Successful participation in the program is considered a yearly progression/graduation requirement. Prior to program implementation, students completed two 18 to 25-item validated questionnaires to assess demographics and their baseline level of professionalism. Descriptive statistics were utilized to evaluate the results. Results: A total of 383 students (61%) completed the survey. Student responses revealed less than half agreed or strongly agreed to all statements regarding their practice of professional attitudes/behaviors or rated themselves as very good or excellent in exhibiting professionalism, 42% (n=162) and 28% (n=109) respectively. Additionally, only 44% (n=167) of students rated their baseline professional activity level as “leader” or “active member,” while the majority (56%) classified themselves as an “inactive member” or reported “no involvement”. Finally, 81% (n=311) of students agreed or strongly agreed that a program focused on professional engagement is important and helpful. Implications: Given the gap between students’ perceptions of their own professionalism and their perceptions of the importance of professional engagement, the implementation of co-curricular professional experiences, in compliance with ACPE Standards 2016, should be well received by students.

Assessment of Professionalism in Pharmacy, A Novel Instrument (APIPHANI). Gloria Grice, St. Louis College of Pharmacy, Claude J. Gaebel, St. Louis College of Pharmacy, Kilinyaa Cothran, St. Louis College of Pharmacy, Gemma Geslani, St. Louis College of Pharmacy, Cody Ding, University of Missouri - St. Louis College of Education. Objectives: Available instruments for assessing professionalism are limited in number as well as detail or they demonstrate a ceiling effect, restricting their applicability for programmatic assessment at schools and colleges of pharmacy. The objective of this study was to design and validate a tool to assess professionalism among student and practicing pharmacists. Method: Using the three professionalism pillars...
Assessment of Reliability and Validity of a Sterile Compounding Rubric. Jeanne E. Frenzel, North Dakota State University, Elizabeth T. Skoy, North Dakota State University, Heidi Eukel, North Dakota State University. Objectives: To evaluate students’ ability to evaluate a medication order and prepare a compounded sterile preparation. Method: Students received a medication order which they evaluated for appropriateness, including Board of Pharmacy required information on a physician’s order, dangerous abbreviations, and medication dose, route, and frequency. Students then aseptically prepared the medication in compliance with United State Pharmacopeia Chapter <797> using the sterile compounding rubric to perform self and peer evaluation. Students were provided opportunities to practice medication order evaluation, garbing, aseptic technique, and preparation of compounded sterile products during weekly laboratory experiences. Results: Eighty-seven students completed the activity. Of those students, 2 faculty graded the same 38 students independently to establish rubric inter-rater reliability. Results were analyzed using cross-tabulations and Kappa statistics. Of 52 rubric items, 28 showed no variation in grading; meaning that faculty evaluators consistently agreed whether students were able to accomplish these objectives. Additionally, 3 of the 24 remaining rubric items had small standard deviations of 0.113 – 0.223, indicating a high degree of consistency across evaluators. Implications: The sterile compounding rubric is reliable and can be used to precisely assess students’ ability to evaluate a medication order and prepare a compounded sterile preparation.

Assessment of Student Performance with an Objective Structured Clinical Examination and an Annual Assessment Exam. Elizabeth M. Urteaga, University of the Incarnate Word, Rebecca L. Attridge, University of the Incarnate Word, Kimberly B. Cauthon, University of the Incarnate Word, Amy P. Witte, University of the Incarnate Word. Objectives: An objective structured clinical examination (OSCE) was used to evaluate how effectively pharmacy students’ communicate and apply knowledge to simulations of commonly encountered patient scenarios. The progression of performance of second- to third-year and third- to fourth-year pharmacy students was evaluated. The results of the OSCE were also compared to overall and individual performance on an annual student assessment exam. Method: Second-, third-, and fourth-year pharmacy students completed an OSCE as part of their required courses in 2012, 2013, and 2014. Each OSCE station was designed to assess specific curricular outcomes. Third-year pharmacy students were also assessed using an internal, annual, case-based, multiple-choice exam designed to assess curricular outcomes. Pearson’s correlation was used to determine correlation between the OSCE and annual case-based exam. Results: In 2014, 261 pharmacy students completed the OSCE and consented to the study. The median communicative and clinical scores out of a score of 100 ranged from 95.8-98.4 and 58.7-78.7, respectively. The second-year students’ median scores were higher than the third- and fourth-year students. Progression data revealed an improvement in performance for both the second- to third-year pharmacy students (p < 0.0001) and third- to fourth-year pharmacy students (p = 0.005). The third-year OSCE clinical skills scores correlated with the third-year annual student assessment exam (0.3228; p = 0.002). Implications: OSCEs can evaluate clinical skills and communication skills among professional students. Implementation of OSCEs can be an effective tool for assessment of curricular outcomes and the CAPE domains.

Assessment of Students’ Ability to Incorporate a Computer into Increasingly Complex Simulated Patient Encounters. Sarah Ray, Concordia University Wisconsin, Katie L. Valdovinos, Concordia University Wisconsin. Objectives: To evaluate students’ ability to evaluate a medication order and prepare a compounded sterile preparation. Method: Students were required to utilize a computer to document clinical information gathered during a SPE. Instructors evaluated students’ ability to effectively incorporate a computer into a SPE with a rubric. Students received specific instruction on effective computer use during patient encounters. Students were then re-evaluated by an instructor during subsequent SPEs of increasing complexity using the same rubric. Results: Prior to receiving instruction, 45% of students effectively incorporated a computer into a SPE of retrieving a medication list from a simulated depressed patient. After receiving instruction, 67% of students were effective in their use of a computer during a SPE of performing a pharmaceutical care assessment for a patient with COPD, p = <0.05 compared to pre-instruction. Fifty seven percent of students were effective in their use of a computer during a SPE of retrieving a medication list and social history from a simulated alcohol-impaired patient, p = 0.087 compared to pre-instruction. Implications: Instruction can improve pharmacy students’ ability to incorporate a computer into SPEs, a critical skill in building and maintaining rapport with patients and improving efficiency of patient visits. Complex encounters may affect students’ ability to utilize a computer appropriately. Students may benefit from repeated practice with this skill, especially with SPEs of increasing complexity.

Assessment of an Instructional Design Change: Peer-Led vs Faculty-Led SOAP Note Instruction. Aimée F. Strang, Albany College of Pharmacy and Health Sciences, Jeffrey M. Brewer, Albany College of Pharmacy and Health Sciences, Teresa J. Lubowski, Albany College of Pharmacy and Health Sciences, Michael R. Brodeur, Albany College of Pharmacy and Health Sciences, See-Won Seo, Albany College of Pharmacy and Health Sciences, Emily Sutton, Albany College of Pharmacy and Health Sciences. Objectives: Determine if a change from peer-led instruction to faculty-led instruction made a difference in the quality of student SOAP note writing. Method: Student evaluation data suggested that near-peer instruction in an integrated problem solving (IPS) workshop was suboptimal and resulted in a change to faculty-led instruction. An IPPE SOAP note assignment in the summer following IPS was used to measure changes in student outcomes. A 3-point rating scale was used to measure the following elements of the SOAP note: subjective, objective, assessment, plan and note construction. Total rubric score was measured out of 15 points. Other collected data
included number of patient diseases, total number of medications, number of OTC medications, and number of PRN medications. Four faculty graders attended several norming sessions to calibrate scoring. T-tests were used to detect differences between the groups. A p-value of <0.05 was considered significant. Results: A total of 447 SOAP notes were scored, 237 in the peer-led group, 210 in the faculty-led group. Student GPAs were comparable between both groups. There was no significant difference in total number of diseases or total number of patient medications between groups. The faculty-led group had significantly higher scores in each element (subjective 2.5 vs 2.2, objective 2.4 vs 2.1, assessment 2.2 vs 2.0, plan 2.2 vs 1.9, note organization 2.3 vs 2.1, total score 10.5 vs 7.8) and had significantly less failures (28 vs 42).

Implications: Measuring positive effects from our instructional change closes the assessment loop and also helps justify resources needed for faculty-led group instruction.

Assessment of the Triad Method in Women’s Health Self-Care Topics. Kristine R. Carrasco, Midwestern University, Siripa Chakavarnmongkol, Stephanie J. Counts, Midwestern University/Glendale, Mary K. Gurney, Midwestern University/Glendale, Shareen El-Ibiary, Midwestern University/Glendale. Objectives: Reports suggest women’s health education in pharmacy curricula is lacking. Previous studies evaluated active learning methods in women’s health but none in women’s health self-care. The triad active learning method involves three students role-playing as a pharmacist, patient, and grader to practice counseling skills. The study objective was to evaluate the triad method in increasing pharmacy student knowledge and confidence about women’s health self-care topics. Method: First-year pharmacy students in a professional skills development course participated in six didactic lecture hours on women’s health self-care topics, a workshop utilizing the triad method, and a standardized-patient interview. A pre- and post-workshop survey assessed the students’ baseline knowledge and confidence in counseling on women’s health self-care. Usefulness of the triad method as a learning method was also assessed. Post-patient interview, similar items were measured. Surveys were voluntary, anonymous and linked using a respondent-generated ID. Study was approved by the Institutional Review Board. Results: Eighty-nine responses were matched and analyzed (response rate = 60%). Knowledge item scores improved significantly post-workshop (p = 0.035). Pre-workshop self-reported knowledge and confidence scores were higher for students with work experience (p = 0.007, 0.046, respectively), however there was no difference in post-patient interview knowledge scores regardless of work experience (p = 0.278, 0.233, respectively). About 46% of students preferred the triad method more than other teaching techniques. Students found the pharmacist role most helpful compared to other roles. Implications: The triad method increased knowledge and confidence levels in pharmacy students and is a useful teaching technique for women’s health self-care issues.

Beliefs, Attitudes and Self Use of AYUSH Medicines among Pharmacy Students in India. Isha Patel, Shenandoah University, Akram Ahmad, USCI University, Muhammad Umar Khan, USCI University, Deepak Bandari, Vaagdevi College of Pharmacy. Objectives: To assess the beliefs and attitude of pharmacy students about Ayurveda, Yoga & Naturopathy, Unani, Siddha, and Homeopathy (AYUSH). Method: This was a descriptive cross sectional study conducted among pharmacy students in two pharmacy schools located in Andhra Pradesh in South India. The study was conducted from the 1st August to 31st August. The study population included all pharmacy students enrolled in PharmD, BPharm and DPharm programs respectively. The AYUSH survey had 8 questions on AYUSH related beliefs and 8 question on AYUSH related attitudes. The survey also asked participants about AYUSH related knowledge, frequency of use of AYUSH and the reason for using AYUSH. The data analyses was performed using SPSS v.20. Chi square test and Mann-Whitney U test were employed to study the association between the independent and dependant variables. Results: A total of 428 pharmacy students participated in the survey. 32.2% of the study population were females and 32.5% of the population resided in rural areas. Male were significantly more likely to hold positive beliefs about AYUSH as compared to females (OR = 4.62, CI = 2.37-8.99, p = 0.001). Similarly, students living in hostels were 100% more likely to hold positive beliefs about AYUSH compared to students living at home (OR = 2.14, CI = 1.12-4.07, p = 0.05). Students living in hostel also had a significantly positive attitude about AYUSH use (OR = 1.74, CI = 1.03-2.93, p < 0.05). Implications: This baseline survey provides important information about the pharmacy student’s perception about AYUSH. Further research is needed to explore the reasons that shape the pharmacy student’s beliefs and attitudes about AYUSH.

Benefit and Utility of a Formal Lesson Planning Process for Effective Laboratory Implementation. Roxie L. Stewart, The University of Louisiana at Monroe, Courtney Robertson, The University of Louisiana at Monroe, Michelle O. Zagar, The University of Louisiana at Monroe. Objectives: To describe faculty perceptions of the benefits and utility of lesson plan and CQI forms in laboratory exercises. Method: Survey data was collected from 28 faculty members regarding their perceived benefit and utility of official lesson plan and CQI forms in developing laboratory exercises. The survey used a 5-point Likert scale and multiple choice questions, and offered opportunities for written comments. Results: Respondents agreed that: overall the lesson plan is a helpful and useful tool (90%); the content of the lesson plan is appropriate and sufficient for planning lab activities and assessment (85%); the lesson plan prompts faculty to organize assessment plans (90%). Eighty-six percent of respondents have revised lab lesson plans for subsequent offerings mostly due to: course evaluation results (24%) and lab liaison feedback (21.62%). Fifty-nine percent state that without the plan, they would be able to execute labs but not as effectively; and 13.6% would not, and lab activities may suffer as a result. Ninety percent believe that overall the CQI form is a helpful and useful tool, and 100% believe it enables reflection on opportunities for improvement. The CQI form enables documentation of lab strengths and weaknesses (94%) and reflection on student perceptions of the lab (90%). Implications: The lesson planning process helps instructors to effectively consider appropriate methods to best achieve outcomes, anticipate potential problems, identify resources, and facilitate assessment of laboratory activities.

Bridging Interdisciplinary Communication Gaps: Early Education to Promote Effective Healthcare Communications. Victoria Hammett, University of North Carolina at Chapel Hill, Carla Y. White, University of North Carolina at Chapel Hill, Jessica M. Greene, University of North Carolina at Chapel Hill. Objectives: To assess the impact of an interdisciplinary communications course facilitated by a school of pharmacy on the professional development of future healthcare professionals Method: A Contemporary Communications in Healthcare course was developed for undergraduates pursuing careers in dentistry, nursing, medicine, pharmacy, public health, and other health sciences. The flipped classroom model course was implemented in Fall 2013 and directed by a faculty member, postdoctoral fellow and instructional technologist within a Pharmacy School. Foundational knowledge was acquired prior to class through reading assignments and quizzes. Students engaged in active classroom learning through discussion forums, blogs, debates, presentations, role-plays,
and weekly reflective notes. A survey to gauge student confidence in their communication skills was administered before and after the course. Results: In two years, a total of 104 undergraduate students have completed the course. Eleven students were admitted to pharmacy school, and seven students to medical school. Ninety-two percent of the class participants completed the course evaluation. Responses revealed that students thought the course was engaging and increased their awareness of the importance of health communication and interdisciplinary team work. Prior to the course, 86% of students wanted to improve their communication skills. Fifty-six percent (N = 58) of post-course respondents felt that their communication skills were above average. Implications: Effective communication is a critical skillset prior to enrollment in health science professional and graduate programs. Pharmacy schools can formalize their role in interdisciplinary health communications education and highlight the value of interdisciplinary teamwork through the development of undergraduate communication courses.

Building Pharmacy Practice Research Skills in a Large Research Collaborative. Nancy Waite, University of Waterloo, Brad Jennings, University of Guelph, Beth Sproule, University of Toronto, Lisa Dolovich, McMaster University, Sherilyn Houle, University of Waterloo, Linda MacKeigan, Eric F. Schneider, University of Waterloo, Zubin Austin, University of Toronto, Jonathan Blay, University of Waterloo, Lisa M. Wenger, University of Waterloo. Objectives: To understand students’, staff, and researchers’ experiences with pharmacy practice research skills-capacity building (CB) opportunities, both formal (online modules, webinars) and informal (journal club), within the large, multi-institutional Ontario Pharmacy Research Collaboration (OPEN). Method: Eighteen months into the OPEN program, an online survey, which included CB related usage, satisfaction and recommendation questions, was sent to all OPEN members. Structured interviews were conducted with select members of OPEN. A thematic content analysis was completed of interview transcripts. Results: Over 52 students (46 undergraduate, 6 graduate level) and 55 researchers (faculty and staff) are now part of OPEN. Survey response rate was 44% (n = 37) and 23 interviews were conducted. Although relatively few respondents had taken part in formal (21.6%) or informal (40.5%) capacity building activities, satisfaction levels were high. Similarly, qualitative findings showed that while some participants struggled to identify CB activities, many saw CB as a “fundamental principle” of OPEN and detailed how they had gained pharmacy practice research skills during their OPEN experience. The resources that were particularly valued included information about health systems, gender/vulnerable populations and new research methods, as well as, knowledge translation, project management and communication skill building activities. Implications: The OPEN capacity building program has provided effective support for pharmacy practice research development amongst a diverse group of trainee/researchers with varying learning needs. Resources identified as particularly valuable will be maintained. The next step is to develop strategies to enhance network members’ awareness of OPEN’s CB resources and to assist them in identifying resources of most personal benefit.

CAPE Outcomes at the Course Level: Course Mapping for Assessment and Improvement. Sandra Benavides, Nova Southeastern University, Jaime Riskin, Nova Southeastern University, Jennifer Steinberg, Nova Southeastern University, Matthew J. Seamon, Nova Southeastern University. Objectives: The Center for Advancement in Pharmaceutical Education (CAPE) Educational Outcomes 2013, provide guidance on curricular development and assessment. The outcomes focus on the application of knowledge, skills, and attitudes. The outcomes can guide curricular assessment in both overall curricular outcomes and individual course objectives. Method: The Patient Care Management skills laboratory at the college of pharmacy was redesigned with the implementation of the new curriculum. In order to assess and improve the laboratory course, a skills-based practicum was conducted. The components of the skills-based practicum were based on skills required for advanced practice pharmacy experience (APPE) readiness. After the practicum, faculty determined areas in which performance by the students was not optimal. In order to define the necessary outcomes of the course, a Delphi technique was employed to review the CAPE educational outcomes and determined which applied specifically to the course. After a consensus was reached, each activity conducted in the course sequence was mapped to the educational outcomes. A frequency of exposure to the outcome was calculated. Results: Fourteen CAPE sample objectives/skills from the various CAPE domains were specifically identified as being pertinent to the 3-course lab sequence. The frequency of exposure was between 1-14%. As a result, the lab sequence was re-designed to increase the frequency of exposure for each objective. Implications: Individual courses can be mapped to specific educational outcomes or objectives and refined based on areas that are not sufficiently covered. Identification of gaps of instruction at the course level is beneficial to restructure the learning activities in the course.

CHARMing Students with Feedback in Authentic Assessment. Ashley N. Castleberry, University of Arkansas for Medical Sciences, Cora L. Housley, University of Arkansas for Medical Sciences, Nalin Payakachat, University of Arkansas for Medical Sciences, Kathryn K. Neill, University of Arkansas for Medical Sciences, Cindy D. Stowe, Sullivan University. Objectives: To globally assess students’ performance on objective structured clinical examinations (OSCEs) across the curriculum, a method of categorization was created to map checklist items for all cases. This categorization system is used to provide structured performance feedback to both students and faculty. Method: The model, abbreviated CHARm, represents the 5 areas critical to the role of a practicing pharmacist (Collecting Information, Handling Over Information, Assessing, Recommending, and Monitoring). Each checklist item is assigned to a category, and performance results are analyzed and reported via individualized report cards for students. Comments are provided for each section. Results: Over 30 OSCE cases used in 5 courses have been mapped to CHARm. After receiving CHARm report cards, P3 students (n = 112) completed a survey eliciting feedback on their perception of the usefulness of this method. Students agreed or strongly agreed that the CHARm report card improved understanding of OSCE performance (75%), was easy to read and interpret (84.8%), was constructive (81.1%), and helped determine areas of focus for future OSCEs (80.8%). 86.7% would like to continue receiving CHARm report cards. Implications: Results of CHARm provide both students and faculty valuable feedback. Students receive meaningful and detailed feedback on their OSCE performance that does not violate the integrity of the cases, and faculty can globally assess student performance in these key areas to inform curricular quality improvement and provide linkages across the didactic and experiential curriculum. This method serves as a model for other schools to provide and receive feedback in a longitudinal design of competency assessment.

Change in Participant Perceptions Following an Interprofessional Experience with Pharmacy, P.T. and P.A. Students. Sabrina Sherwood, Idaho State University, Catherine A. Cashmore, Idaho State University, Paul S. Cady, Idaho State University. Objectives: The purpose of this study was to assess the perceptions of health professional students regarding inter-professional education before and after a case studies experience with students from other disciplines.
Comparing Student Perceptions and Performance Between Campuses

Method: A three-hour interprofessional education experience at Idaho State University was attended by pharmacy, physician assistant, and physical therapy students. A modified Readiness for Interprofessional Learning Survey (RILPS) was used to assess changes in perception of health professionals prior to and immediately following the simulation. Seven questions assessed perceptions of other health care professionals. Students were also asked to rate their overall satisfaction post-experience. A Wilcoxon signed rank test, Kruskal–Wallis analysis, and Tukey test were used to assess for statistically significant differences. Results: Statistically significant improvements pre to post-IPE experience were documented regarding student perceptions of the need, professional benefit, and potential patient outcomes of IPE activities (p ≤ .05). Based on the overall satisfaction scores, students were satisfied with the IPE experience. However, we did find a significant difference in overall satisfaction scores between the professions, with P.T. students reporting less satisfaction than P.A. and pharmacy students (p ≤ .05). Implications: These findings suggest that case studies experiences involving students from different disciplines improve student perceptions of collaboration with other health professionals. The incorporation of interdisciplinary activities can positively change perceptions of collaboration and learning among health care professionals. Future research should examine different IPE experience designs to determine which experiences are most beneficial for student learning, and ultimately improvement in patient outcomes among practitioners trained in this manner should be assessed.

Characterization of Collaborations Between Doctor of Pharmacy Programs and Public Health Departments or Organizations. Natalie A. DiPietro Mager, Ohio Northern University, Leslie Ochs, University of New England, Paul L. Ranelli, University of Minnesota, Abby A. Kahaleh, Roosevelt University, Monica R. Lahoz, MCPHS University–Worcester/Manchester, Radha Patel, University of South Florida, Oscar W. Garza, University of Minnesota, Daina Isaacs, Chicago State University, Suzanne Clark, University of Wyoming. Objectives: A focus for the 2014-2015 AACP Public Health Special Interest Group (PH-SIG) has been to explore the integration of pharmacy and primary care and public health. The Institute of Medicine report (2012), Primary Care and Public Health: Exploring Integration to Improve Population Health, serves as a framework to support emerging opportunities between these sectors. There are few published reports detailing specific ways in which academic pharmacy is collaborating with state/local public health departments, public health organizations or academic public health programs. The objective of this study is to characterize such collaborations among members of the PH-SIG. Method: Members of the PH-SIG Development Subcommittee created a survey to assess collaborations between Doctor of Pharmacy programs and state/local public health departments, public health organizations, or academic public health programs. The survey was administered electronically to all individuals registered for the SIG email list using Qualtrics software. The study was determined to be exempt by the university IRB. Results: A total of 26 members from 26 schools/colleges of pharmacy replied to the survey. Of those, 6 reported no collaborations. The remaining institutions reported many and diverse collaborations, ranging from participation in product safety commissions and emergency preparedness to programs focused on disease state management and antimicrobial resistance. Implications: By sharing survey results, the PH-SIG will highlight academic pharmacy’s impact on public health and may stimulate ideas for areas of potential collaboration for those institutions that currently report no such involvement.

Comparing Students’ Over-the-Counter/Self-Care Products Perceptions to Their Actual Performance One Year After Course Completion. Kathy Zaiken, MCPHS University–Boston, Catherine Taglieri, MCPHS University–Boston, Lana Dvorkin-Camiel, MCPHS University–Boston, Susan Jacobson, MCPHS University–Boston, Dhiren K. Patel, MCPHS University–Boston, Stefanie C. Nigo, MCPHS University–Boston, David Schnee, MCPHS University–Boston, Amee Mistry, MCPHS University–Boston, R. Rebecca Couris, MCPHS University–Boston, Jennifer Goldman-Levine, MCPHS University–Boston. Objectives: To compare graduating pharmacy students’ perception on over-the-counter (OTC)/self-care products knowledge with their actual performance on a short assessment. Method: Graduating students were invited to participate in a survey assessing their perception of OTC knowledge and actual knowledge following completion of a short assessment (13 questions on the most common OTC categories, created by faculty) one year after completion of a self-care course. Results: One hundred forty seven students (out of 279 enrolled in the pharmacy board review session) completed the survey. Three areas where students reported being very comfortable/confident counseling patients included: allergies/cough/cold (98%), fever/pain (98%) and oral hygiene (88%) with least comfort expressed in herbals (44%), pediatric dosages (52%), and weight loss/management (55%). Students performed best on questions related to skin care (dandruff/acne/diaper rash), natural products, cough/cold, and were challenged with patients included: allergies/cough/cold (98%), fever/pain (98%) and oral hygiene (88%) with least comfort expressed in herbals (44%), pediatric dosages (52%), and weight loss/management (55%). Students performed best on questions related to skin care (dandruff/acne/diaper rash), natural products, cough/cold, and were challenged with skin care (dandruff/acne/diaper rash), natural products, cough/cold, and were challenged with skin care (dandruff/acne/diaper rash), natural products, cough/cold, and were challenged. Implications: Graduating students report retaining a significant amount of OTC knowledge one year after course completion. Student perception and performance did not consistently correlate. The areas that appeared to be more challenging to them should be re-evaluated by the faculty to determine if curriculum changes should be implemented.

Comparing the Impact of Pass/Fail Versus Traditional Letter Grading on Postgraduate Training Rates. Dana Manning, Wilkes University, Kimberly A. Ference, Wilkes University, KarenBeth H. Bohan, Wilkes University, Adam C. Welch, Wilkes University. Objectives: To
determine if moving to a pass/fail grading system for advanced pharmacy practice experiences (APPEs) would have an effect on students’ ability to gain post-graduate training positions. **Method:** Prior to switching to pass/fail, a survey was administered to residency directors that identified a ranking of eight factors to consider when selecting a residency candidate. The percentage of students entering into residency or fellowship was identified for one class year before and one class year after the switch from traditional grading to pass/fail grading in APPEs. **Results:** There were 166 responses from residency directors. Performance during interviews ranked as the most important (8 median, 8 mode [higher numbers equal more important]) factor when considering a residency candidate. Letters of recommendation were next important (7 median, 7 mode), followed by transcript grades (5 median, 6 mode) and performance on APPEs (5 median, 5 mode). Prior to moving to pass/fail APPEs, 22.4% of the graduating class entered post-graduate training. After implementation of pass/fail grading criteria, 35.2% of graduates entered post-graduate training. **Implications:** It appears that residency directors value interview performance and letters of recommendation more than grades when considering residency candidates. Residency and fellowship rates improved after switching to pass/fail APPE, although the sample was small. More research is needed but preliminary data suggest that moving to a pass/fail grading system for APPEs does not adversely affect students’ ability to gain acceptance into post-graduate training.

**Comparison of E-Lecture Formats in a Pathophysiology Course.**
Ashley Woodruff, University at Buffalo, The State University of New York, Gina M. Prescott, University at Buffalo, The State University of New York, Nicole Paolimi-Albanese, University at Buffalo, The State University of New York. **Objectives:** Students may prefer an e-lecture platform with a user friendly interface. The primary objective of this study was to evaluate student preference of different platforms for post-class pre-class e-lectures on a learning management system (LMS) using Youtube© or a SCORM package (Sharable content object reference model). **Method:** Four e-lectures were created as pre-class assignments before four in-class pathophysiology lectures to P1 students. All lectures were taught by the same instructor. Two e-lectures were posted as unlisted videos on Youtube© and two were posted as a SCORM package on the LMS. A 15-question, anonymous paper survey was distributed with a course exam in the fall 2014. Survey questions included demographic information pertaining to e-lecture exposure, technical difficulties, and 5-point Likert scale questions assessing the utility and preference of using e-lectures. **Results:** One hundred and twenty four students responded to the survey (95% response rate). Most students had some experience using e-lectures (50%) and viewed an average of three e-lectures. The majority of students preferred using Youtube© rather than the SCORM format (64% vs 7%, p < 0.01), while 29% had no preference. Pre-class videos enhanced understanding of the lecture (median = 4, IQR 4-5) and were preferred compared to reading assignments (median = 4, IQR 4-5). Thirty-eight students (32%) experienced technical difficulty with the SCORM e-lectures compared to zero with the Youtube© e-lectures. **Implications:** Youtube© is a user friendly, free tool for educators and students alike and may be considered a preferred platform when using e-lectures.

**Comparison of Student Grades on Top 300 Drug Assessments Based on Pharmacy Experience.** Ashton E. Beggs, Belmont University, Leela Kodali, Belmont University, Adam C. Pace, Belmont University. **Objectives:** To compare first year pharmacy (P1) student performance on assessments of top 300 drug between students who had or did not have pharmacy experience prior to a Pharmaceutical Care course. **Method:** One hundred thirty eight P1 students were enrolled in Pharmaceutical Care I in the fall of 2013 or 2014. Students were assessed via weekly quizzes, a midterm exam, and a cumulative final exam. A survey was administered focusing on student work experience in a pharmacy setting. Students were categorized into two groups on the basis of whether or not they had pharmacy work experience. An independent samples t-test was used to compare the mean scores on the assessments between the two groups. **Results:** Comparison between the two groups showed students with pharmacy experience performed significantly better on the top 300 assessments. Students with pharmacy experience averaged 84.2% on the course assessments, while students without pharmacy experience averaged 75.6%. (p < 0.001). When assessed separately, students with pharmacy experience consistently demonstrated quiz (p = 0.002), midterm (p < 0.001), and final exam (p < 0.001) averages higher than students without pharmacy experience. Additionally, when exam averages were combined and quiz and exam averages were combined, statistical significance remained (p < 0.001). **Implications:** Students with pharmacy work experience showed statistically significant higher quiz, midterm, and final exam averages when compared to students without pharmacy experience. These results may assist faculty and staff in encouraging potential students to seek pharmacy experience prior to pharmacy school.

**Current Attitudes and Perceptions of Dual PharmD/MBA Degree Program Students: A Qualitative Analysis.** David Jacobs, University at Buffalo, The State University of New York, Sarah E. Tierney, Erin O’Brien, University at Buffalo School of Management, Karl Fiebelkorn, University at Buffalo, The State University of New York, Christopher Daly, University at Buffalo, The State University of New York. **Objectives:** To evaluate the current perceptions and attitudes of students in the dual PharmD/MBA degree program. **Method:** This was a cross-sectional survey of currently registered students in the University at Buffalo (UB) PharmD/MBA program. A 25-item electronic survey was developed through collaboration with the UB School of Management and administered in Fall of 2014. The survey questions were qualitative and constructed using Likert scale, ranking (1 = most important to 7 = least important) and multi-answer formats. Descriptive statistics were used to analyze the data. **Results:** A total of 23/24 students responded to the survey (96% response rate) and there was even distribution of students within the PharmD/MBA curriculum. When asked to rank importance in the decision to pursue a dual degree, improvement in employment opportunities (mean = 1.83) and career advancement (mean = 2.04) were the most important. Approximately half of respondents (48%) currently plan on completing post-graduate training after pharmacy school, with marketing being the most popular specialty. Most students (95%) believe the PharmD/MBA will make them more competitive in the current job market and 86% said the dual degree will be a positive return on their investment. Overall, 86% of respondents believe the MBA has been worth the investment and 82% would recommend the dual program to an entering student. **Implications:** Students have an increase perception and outlook for employment opportunities post-graduation. Pharmacy students are opting for advanced education to be more competitive in a tight market.

**Current Status of Post-PharmD Fellowships Offered by US Schools/Colleges of Pharmacy.** Simi Gunaseelan, The University of Texas at Tyler, Mohammed A. Islam, West Coast University, Rahmat M. Talukder, The University of Texas at Tyler. **Objectives:** Upon recognition of expanded scope of pharmacy practice, there has been a dramatic expansion in post-licensure specialized training opportunities for pharmacists. The aim of this study is to assess the pharmacy fellowship programs offered by US schools/colleges of pharmacy. **Method:** An online assessment of the status of post-PharmD fellowship programs
Programs were visited. Pertinent information was identified, retrieved and affiliated with US schools/colleges of pharmacy was conducted in November 2014-January 2015. The websites of 132 pharmacy schools/colleges and ACCP Directory of Residencies, Fellowships and Graduate Programs were visited. Pertinent information was identified, retrieved and analyzed. Results: Out of 132 pharmacy programs, 35 (27%) offer 179 fellowships. Sixty one percent of these fellowships \(n=109\) are offered by pharmaceutical industries in affiliation with 8 schools/colleges of pharmacy in diverse areas such as clinical research, regulatory affairs, medical affairs, health informatics, pharmacovigilance, pharmaceutical marketing, etc. Nineteen fellowships (11%) are offered on specialized disease-state categories. Fellowships on other specialized areas include pediatrics, geriatrics, medication safety, drug information, academic pharmacy, leadership, etc. The duration of fellowship programs vary between 1 to 3 years. The organizational structure, educational components, and outcome expectations of fellowship programs vary by program.

Implications: Pharmacists are becoming an integral part of the therapeutic decision making process for diverse patient population. However, fellowship training opportunities focusing specialized disease-states are limited. Most of the currently available fellowship programs are geared towards independent research careers in industry and academia. Our study may provide a useful guide for pharmacy schools/colleges or other institutions to develop new fellowship programs to meet the patient-centric demands of the pharmacy profession.

Debriefing to Improve Student Ability to Assess and Plan for the Care of Persons with Disability. Catherine Cone, The University of New Mexico, Mark J. Smith, The University of New Mexico, Mikiko Yamada, The University of New Mexico. Objectives: At the University of New Mexico College of Pharmacy, it was recognized that students were not performing as expected on patient scenarios involving persons with disabilities (PWD) during objective structured clinical examinations (OSCE). Reflective learning and debriefing is overwhelmingly cited in the literature as a means to explore and change cognitive frames in student learners using simulation. The aim of the study is to evaluate how debriefing used in an OSCE affects student performance in assessing and planning for care of a PWD. Method: Eighty-four students were invited to participate in a debriefing following OSCE’s in their fall and spring terms. Eighty-nine students were in the control group. Students were assigned to one of two debriefing groups. Participation, while encouraged, was not mandatory. IRB approval was received prior to evaluation of data. A two-tailed Student T-test was used for analysis. Results: Student scores related to assessing and planning for patient care in PWD significantly improved in the intervention group by 9% in the fall OSCE and by over 35% in the spring OSCE over the control group. Implications: Debriefing appears to improve student scores in an OSCE in PWD. Whether this translates to students with enhanced cultural sensitivity for PWD in real world settings is unknown. However, the addition of a debriefing to an OSCE with SP’s appears to be a step in the right direction.

Developing Students’ Abilities to Recognize Pitfalls in Assessing Learning through Writing Multiple Choice Items. David G. Fuentes, Pacific University Oregon. Objectives: As part of the 2013 CAPE Educational Outcomes and finalized ACPE Standards, pharmacy curricula must provide students with experiences as educators of various populations. Among these, we include educating future pharmacists. As we educate future pharmacists across the Academy, we often use multiple-choice items (MCI) as the default assessment strategy. Herein, we describe 1) curricular methods to engage students in MCI development, 2) detailed characteristics of MCI created by students and 3) processes by which this process intersects with both student and faculty development initiatives at our program. Method: Third year students in our 3-year PharmD program each developed 8 MCI on various diseases as part of a capstone project designed to develop their skills as educators. Students had no prior formal instruction in writing MCI. Our institutional board approved this project. Results: A total of 768 MCI items were reviewed, showing that students experienced varied levels of difficulty developing stems (83%) and distractors (72%). Specific stem issues included lack of meaningful stems (34%), excessive verbiage (28%), confusing language (35%), incongruent language with distractors (33%) and teaching in the stem (38%). Specific distractor issues included excessive distractors (22%), obvious distractors (35%), length disparities (48%), absolute statements (28%) and ambiguous statements (54%). Regarding topics, most MCI focused on infectious disease, psychiatry, cardiac, endocrine and oncological topics. Implications: Students in PharmD programs may require additional training in MCI development to recognize and avoid common pitfalls and further refine these skills in post-graduate residencies, where assessing PharmD student learning may be required.

Developing a Modular Integrated Medication Management Curriculum in a Doctor of Pharmacy Program. Peter S. Loewen, The University of British Columbia, Patricia Gerber, The University of British Columbia, Glenda MacDonald, The University of British Columbia, James P. McCormack, The University of British Columbia. Objectives: To create an innovative integrated entry-to-practice Doctor of Pharmacy medication management curriculum. Method: A working group composed of students, faculty, learning design experts, and pharmacists from community, primary care, ambulatory care, and hospital practice did literature searches and environmental scans to gather evidence-based best-practices. A goal of the program was to integrate knowledge across all pharmacy practice-related disciplines and themes at the “Inter-disciplinary”-level using Harden’s taxonomy. Expert opinion, curricular maps of our existing B.Sc.(Pharm) and post-baccalaureate PharmD programs, and burden-of-illness data for the province were polled to identify the conditions to be covered. Results: 120 conditions within seventeen modified body-system-based modules (e.g. neurology, toxicology, palliative care) were identified. 13 elements (e.g. epidemiology, medicinal chemistry, pharmacology, patient assessment) were identified for integration in each module. 25% of course time was allocated for “integration activities” in which students integrate knowledge and demonstrate competency to resolve problems, with repeated exposure to issues from earlier in the program. Detailed role descriptions for team members were created. Student assessment was integrated into all aspects of module design. Refinement occurred through consultation with the program Task Force, professional bodies, the faculty, other health programs at the university, and a pilot test within the B.Sc.(Pharm) program. The need for role clarity, faculty development, and a robust foundations course preceding this curriculum were identified as key issues identified and addressed in our program. Implications: Teams are now working within the system to build six modules for delivery starting in January 2016.

Developing and Evaluating Classroom Assessment Techniques (CATs) to Teach the Practice of Pharmaceutical Care. Claire M. Kolar, University of Minnesota, Keri D. Hager, University of Minnesota. Objectives: To create a series of classroom assessment techniques (CATs) designed to provide students low-stakes, individual practice opportunities and give immediate feedback to instructors and students regarding learning of key concepts. Method: Four CATs were developed to reinforce key concepts taught to first-year pharmacy students in a Foundations of Pharmaceutical Care course. Each CAT covered a different aspect of the patient care process and included a short individual exercise, completed online, after a lecture and small group
practice. These four CATs, focusing on obtaining the medication experience, writing goals of therapy, identifying and writing drug therapy problems, and identifying therapeutic alternatives, were selected because they are where students often need additional practice. Students also completed a survey gauging their perceptions of the CATs.

**Results:** Utilization of the CAT results informed decisions course instructors made about which topics needed reinforcement. In particular, on the CAT used to practice writing goals of therapy, only 5.6% of student responses were satisfactory, which lead to additional teaching and practice in the classroom. In addition, 58% and 57% of students agreed or strongly agreed the CATs facilitated their learning and helped evaluate their mastery of the given topic, respectively.

**Implications:** In classrooms where application of lecture content is done in small groups, a series of CATs can be created with minimal resources and used to give students individual practice with concepts and formative feedback, as well as a simple way to provide instructors information about individual student performance without creating additional assignments or formal assessments.

**Developing “Both Sides of the Coin” in a Diabetes Care Elective: Empathy and Evidence-Based Practice Knowledge.** Karleen Melody, University of the Sciences, Shelley Otsuka, University of the Sciences, Katherine Koffer, University of the Sciences, Brandon J. Patterson, University of the Sciences. Objectives: To assess the impact of an elective diabetes care course on student pharmacists’ empathy and knowledge. Method: A 2-credit, elective course on diabetes care, offered to student pharmacists in their third professional year, was created to increase empathy and evidence based practice (EBP) knowledge. Activities were developed to expand upon foundational disease and therapeutics concepts and to simulate real-life situations. The Kiersma-Chen Empathy Scale (KCES), a validated empathy scale out of 105 points, was used to measure empathy. An EBP knowledge assessment, out of 20 points, was used to measure knowledge. An additional ANCOVA analysis was conducted to control for the differences between semesters. Results: The mean pre- and post- KCES score (N=56) was 86.50 ± 7.91 and 92.18 ± 7.86, respectively (p<0.01). The mean pre- and post- knowledge score (N=56) was 7.27 ± 2.52 and 12.82 ± 2.45, respectively (p<0.01). Implications: An elective diabetes care course significantly increased student pharmacists’ empathy and EBP knowledge.

**Development and Assessment of an Interprofessional Education Simulation for Pharmacy and Nurse Practitioner Students.** Michael S. Monaghan, Creighton University, Mark A. Malesker, Creighton University, Ann M. Ryan Haddad, Creighton University, Kathleen A. Packard, Creighton University, Gary N. Elsasser, Creighton University, Lindsay M. Iversen, Creighton University College of Nursing, Kim S. Hawkins, Creighton University College of Nursing, Nancy D. Bredenkamp, Creighton University College of Nursing, Cathy Carrico, Creighton University College of Nursing, Susan Comelly, Creighton University College of Nursing. Objectives: To assess the effectiveness of an interprofessional education (IPE) simulation for fourth year pharmacy and advanced nurse practitioner (NP) students. Method: We designed a clinical simulation focusing on patient safety including communication, medication management, and transfer of care. Simulated patients presented to the primary care setting requiring transfer to an acute care facility and/or assistance with medication management utilizing pharmacy consultation. Student perceptions were assessed using the SPICE-R instrument and reflection questions. The SPICE-R is a validated 10-item instrument measuring perceptions of interprofessional clinical education. This was followed by three questions that assessed the simulation’s effectiveness in requiring team knowledge and experience from each profession, whether or not the experience improved individual clinical performance, and how this team approach impacted patient outcomes. Results: Twenty-one (8 pharmacy 13 NP) students participated and 14 (67%) completed the assessments. Responses were all agree or strongly agree (SA) to 100% of SPICE-R items except those which assessed the individual’s role within Interprofessional care (85.7% agree or SA); understanding of other’s role in interprofessional care (92.8% agree or SA); and clinical rotations being the ideal place for interactions with others (71.5% agree or SA). Reflection responses indicated that going into the simulation many were ambiguous about their role but came out clearly knowing how their individual education and their interaction improved patient outcomes. Implications: Students from both professions expressed satisfaction and increased awareness of the importance of collaboration and communication to assure patient safety within healthcare. Increasing IPE experiences prior to clinical rotations should be considered.

**Development in Critical Thinking: One Institution’s Experience.** Michael J. Peeters, The University of Toledo. Objectives: Development of critical thinking is a nearly universal goal of higher education. We sought to examine critical thinking (CT) development within a PharmD program. Method: Three tests of CT were administered to PharmD students over 4 sessions throughout years 1-3 of the program. Students took the tests in P1Fall, P1Spring, P2Spring, and P3Spring. The California Critical Thinking Skills Test (CCTST), Health Sciences Reasoning Test (HSRT) and the Defining Issues Test (DIT) were administered. While CCTST and HSRT are similar for assessing simple/analytical CT, the DIT is different, assessing complex/problem-solving CT. first-year GPAs, second-year GPAs and third-year GPAs were regressed by each CT test. Results: The CCTST was administered only in P1Fall and was 20.2±4.6 (n=76). For HSRT, mean±S.D. was 22.3±4.0 (P1Spring, n=100), 22.7±5.0 (P2Spring, n=97), 23.2±4.6 (P3Spring, n=51); no significant differences. The DIT was also administered each time, showing 35.2±14.5 (n=167), 37.2±13.9 (n=92), 42.5±15.4 (n=98), 41.5±17.1 (n=43). P1Fall-P2Spring were significant (p<0.001; small effect-size (0.3 Cohen’s d), while P1Spring-P3Spring were not significant. Comparing top-half vs bottom-half on P1Fall-P2Spring DIT, was large effect-size difference (p=0.001; 0.8 Cohen’s d). Regression of first-year GPA using CCTST, HSRT, or DIT were not significant; except P1Fall assessments, all regressions on second-year and third-year GPAs were significant. Implications: PharmD students developed appreciably in complex CT, though not simple CT. Interestingly, the students with lowest complex CT appear to benefit most. Both the HSRT and DIT were significant predictors of second-year and third-year GPA, while no CT test predicted first-year GPA. This is first pharmacy study to show large positive effect-size DIT.
Defining Issues Test (DIT) through September 2014. Mean changes in test scores were reported as weighted mean differences (WMDs) and accompanying 95% confidence intervals (CIs) were pooled using a random-effects model. Statistical heterogeneity and publication bias were assessed using the I² statistic and Egger’s weighted regression statistic, respectively. Random-effects meta-regression was performed to characterize a potential relationship between time of assessments (in months) and change in test scores. Results: Of 403 potential studies identified, 70 were included (36 CCTST, 20 DIT, 14 HSRT; interscreener kappa = 0.82, strong agreement); 6340 students were analyzed. There was a significant change in composite scores for CCTST (1.616, 95%CI 0.911-2.321) and DIT (3.469, 95%CI 2.174-4.764). There was no significant difference in composite HSRT scores (0.032, 95%CI -0.422-0.486). Significant heterogeneity was demonstrated in each composite group (I² >25% for all). When sub-grouped by profession, significant improvements were noted with CCTST (Nursing, Pharmacy, Occupational Therapy), DIT (Nursing, Dental, Allied Health), and HSRT (Dental Hygiene). Only Dental (HSRT) demonstrated a significant reduction in performance. There were no significant findings from meta-regression. Implications: Among health profession programs, students’ performances on critical thinking assessments were variable and depended on the assessment instrument. CCTST and DIT evidence showed development; HSRT did not.

Development, Implementation, and Preliminary Results of an Interprofessional Elective Course Between Pharmacy and Dentistry Programs. Joshua Caballero, Nova Southeastern University, Jennifer E. Thomas, Nova Southeastern University, Mark Schweizer, Nova Southeastern University, Elizabeth F. Shepherd, Nova Southeastern University, Mairelina Godoy, Nova Southeastern University. Objectives: Current accreditation guidelines state pharmacy programs should promote interprofessional education, both in didactic and experiential settings. It has been suggested that interprofessional education with other health care professions be incorporated before advanced pharmacy practice experiences. Therefore, our institution developed an interprofessional elective course with the College of Dentistry. The objectives of the course were to determine the amount of knowledge gained by pharmacy and dental students through participation in this course. Method: The two credit hour course developed included five didactic courses recorded online, two live reflective exercises, and ten onsite visits. Pharmacy and dental students were paired to provide care for patients with HIV receiving dental services at a Ryan White funded university dental clinic. With IRB approval, surveys were provided to the students prior to and after the course and interventions by pharmacy students documented. Results: All students in dentistry and pharmacy gained an understanding for the roles each play in optimizing patient care. Among pharmacy students, medication reconciliation and patient education accounted for over 75% of the pharmacy interventions (n=156) in 30 patients. Reflective exercises demonstrated increased knowledge regarding medication therapy management and insight into the social factors affecting patients with HIV. Course evaluations were positive. The establishment and success of the collaboration also led to two funded grants totaling $20,000. Implications: Overall, an elective interprofessional course with online lectures and patient interaction increased students’ knowledge and insight towards an underserved population and each other’s profession.

Educational Instagram® Content Cross-Posted to Facebook® and Twitter® to Complement Infectious Diseases Pharmacotherapy Coursework. Timothy P. Gauthier, Nova Southeastern University, Jeffrey P. Bratberg, The University of Rhode Island, Kaitlyn Loi, The University of Rhode Island, Margarita V. DiVall, Northeastern University. Objectives: Assess the utility and usefulness of educational Instagram® content cross-posted to Facebook® and Twitter® as a complement to core didactic material. Method: Objectives for infectious diseases (ID) pharmacotherapy courses from two institutions were used to develop sixty corresponding Instagram® posts. Each post included a photograph and caption to describe ID concepts, clinical pearls and/or links to key resources. Some posts included open-ended questions and/or hashtags to encourage increased engagement. A unique public account name, @IDFunTime, was created on Instagram® and on Twitter® and Facebook® for cross-posted content. Two voluntary, anonymous IRB-approved surveys were offered to all professional year student pharmacists (N=262) before and after the 12-week posting period. The first survey assessed current social media use, the second assessed actual use and impressions of @IDFunTime content. Results: 77% of students completed the pre-survey. 81% planned to follow on Facebook®, 45% on Instagram®, and 40% on Twitter®. 89% of students completed the post-survey. 33% followed on Facebook®, 18% on Instagram®, and 9% on Twitter®. Instagram® followers demonstrated the greatest content engagement. Consistent with pre-survey results, posts that reinforced class content were ranked most useful. Instagram® users ranked content usefulness significantly higher than Facebook® followers or non-followers (P <0.001). 62% agreed (A) or strongly agreed (SA) that IDFunTime enhanced learning related to course objectives, and 65% A/SA that social media engaged them with course content outside of class. Followers were significantly (P <0.001) more likely than non-followers to A/SA with these outcomes. Implications: Instagram® followers believe that this platform is useful for educational content engagement.

Effect of a Crew Resource Management Lecture and Activity on Student Readiness for Interprofessional Learning. Adam Pate, The University of Louisiana at Monroe. Objectives: To evaluate baseline readiness and effects of a lecture on readiness for interprofessional education among pharmacy students Method: Third year pharmacy students were given the Readiness for Interprofessional Learning Survey before and after a lecture and class activity on team based decision making that emphasized Crew Resource Management and it’s application to healthcare teams. The class activity involved groups of students acting out scenarios based on actual medical errors from ahrq.gov webM&M cases. Upon the conclusion of each scenario the entire class participated in a “who’s fault is it and how can we fix it” discussion focusing on team delivered health care and shared responsibility. Results: 83 of 111 students (75% response rate) completed both the pre and post survey RIPLS. Mean pre and post total and subscale scores were compared with a paired t-test. Mean total score and subscale scores were compared with a paired t-test. Mean total score and subscale scores were compared with a paired t-test. Mean total score and subscale scores were compared with a paired t-test. Mean total score and subscale scores were compared with a paired t-test. Mean total score and subscale scores were compared with a paired t-test. Mean total score and subscale scores were compared with a paired t-test. Significant improvements were noted with CCTST (Nursing, Pharmacy, Occupational Therapy), DIT (Nursing, Dental, Allied Health), and HSRT (Dental Hygiene). Only Dental (HSRT) demonstrated a significant reduction in performance. There were no significant findings from meta-regression. Implications: Among health profession programs, students’ performances on critical thinking assessments were variable and depended on the assessment instrument. CCTST and DIT evidence showed development; HSRT did not.

Effect of a Flipped Classroom with Team-Based Learning on Retention of Nonprescription Medication Knowledge. Tara R. Whetsel, West Virginia University. Objectives: 1. Determine whether a flipped classroom with team-based learning improves knowledge retention compared to a traditional lecture-based model. 2. Compare student performance and satisfaction between a flipped classroom model and a traditional lecture-based model. Method: The nonprescription
medication course, taught to third-year Doctor of Pharmacy students, was a 3-credit hour traditional lecture course meeting 3 days a week for 50 minutes. The course was redesigned as a flipped classroom with team-based learning. The new design included approximately 1 hour per week of pre-recorded lecture which students viewed prior to attending a 2-hour class period. Team-based learning and other active learning techniques were used during class. To assess knowledge retention, a 24-item multiple-choice test was developed and administered to fourth-year pharmacy students approximately 16 months after the final exam for the course. Exam scores, overall course grades, and student satisfaction were also compared between the 2 models. Results: The flipped classroom did not improve knowledge retention compared to a traditional model (average exam score 73.3% vs. 73.0%). Overall course grades were slightly higher with the flipped classroom (average final grade 92.0% vs. 90.8%). Students in the flipped classroom rated their ability to assess patients, select appropriate medications, and counsel patients higher than students in the traditional model. Implications: The flipped classroom model did not improve knowledge retention but did improve students’ perceptions of their patient care abilities. Further research on the flipped classroom is needed.

Efficacy of a Novel Men’s & Women’s Health Professional Laboratory. Safaa W. Aref, Amy N. Stiner, Purdue University, Kimberly S. Plake, Purdue University. Objectives: The objective of this study is to evaluate student pharmacists’ confidence in men’s and women’s health topics after an active-learning laboratory. Method: Third professional year students (N = 140) participated in a laboratory session with three stations related to men’s and women’s health, including: 1) an electronic scavenger hunt where students worked in groups to solve patient cases, 2) a product station where students educated a mock patient about a randomly selected product, and 3) a patient case and mock counseling station where students counseled a mock patient on a prescription product. Pre, retrospective pre, and post-assessments (29 Likert scale items) were administered. Assessments focused on students’ confidence and comfort level with men’s and women’s health topics, such as their ability to counsel on gender-specific products and make a therapeutic recommendation. Descriptive statistics were performed for all items. Wilcoxon signed-rank and Friedman tests were utilized for comparisons. Results: Ninety-five percent of students completed all confidence assessments. Statistically significant differences (p < 0.01) between students’ confidence level prior to and after the session were found for all items with students indicating higher confidence. Items included counseling on contraceptive sponges, intracervical insertion, and the NuvaRing®. Students also indicated less discomfort (p < 0.01) regarding these topics. Implications: Communicating about men’s and women’s health topics can be embarrassing for some students. An active learning laboratory session on men’s and women’s health topics can increase student confidence in their counseling on such topics and resulting interactions with patients.

Engaging Pharmacy Students in High-Level Thinking: Findings from an Active Learning Strategy. Wendy I. Brown, North Dakota State University, Dan Cernusca, North Dakota State University. Objectives: Maximize training effectiveness for adult learners by using a variety of teaching strategies that promote higher level thinking. Method: A lecture-based P1 pathophysiology class was evaluated for training effectiveness Fall 2013. Adult learning strategies, case application as homework and clicker questions during lecture were used; however, summative case-based exam results were sub-optimal. In the Fall of 2014, one course module was redesigned using blended learning and flipped classroom strategies. Three course sessions became online activities where students viewed 30 minute pre-recorded lecture modules and associated online cases. The other three meeting were face-to-face with two of them as flipped classrooms. During flipped classroom, students created SOAP notes from case studies. They worked in teams during the first half of the session and then teams with similar cases paired to discuss their outcomes. SOAP notes were posted as Wikis in Blackboard. Study approved by NDSU Institutional Review Board. Results: Prior knowledge survey administered to the cohorts in both semesters found no significant differences between groups. The analysis of the summative exam results indicated statistically significant increase for the active learning group for both SOAP note synthesis (p < 0.05) and immunologic disorders active learning content as evaluated by case-based multiple-choices questions (p < 0.05). Implications: Grouping similar content and adapting active learning by modules is a realistic way for faculty to engage students at a higher level of learning while maintain all responsibilities. Active learning produced positive results on students’ performance. Student perceptions indicated that variety in teaching strategies was well received.

Engaging Postgraduate-Year-Two Pharmacy Residents in Formal Evaluation of Platform Presentations at a Regional Residency Conference. William A. Prescott, University at Buffalo, The State University of New York, Amy Ives, University of Maryland, Jeff Huntress, University of Rochester Medical Center, Mark S. Johnson, Shenandoah University. Objectives: To implement and assess the perceived impact of a program designed to engage postgraduate-year-2 (PGY2) pharmacy residents in formal co-evaluation of platform presentations at a regional residency conference. Method: All PGY2 residents attending the 2014 ‘Eastern States Residency Conference’ were paired with a preceptor and scheduled to serve as a formal co-evaluator for a platform presentation session. A 2-question pre-survey and an 11-question post-survey were used to assess residents’ perceived usefulness of this program and how effectively the preceptor modeled, coached, and facilitated the resident on formal evaluation and provision of constructive feedback. The Wilcoxon signed-rank test was used to compare paired data. Descriptive statistics were used to report data collected through the pre-/post-surveys. Results: A total of 49/52 residents who participated in the program completed the pre-/post-surveys (response rate 94.2%). The percentage of residents who rated themselves as skilled: in critically evaluating a platform presentation increased from 47% to 100% (p < 0.0005); and, in providing constructive feedback increased from 61% to 100% (p < 0.0005). Ninety-three percent of residents agreed that the program was useful for training them to serve as a formal evaluator; and, that the program improved their confidence as a formal evaluator. More than 88% of residents agreed the preceptor effectively modeled, coached, and facilitated them through the activity. Nearly all residents (93%) agreed the program should be continued in future years. Implications: This program was well received and improved resident self-reported skills in formal evaluation and provision of constructive feedback. Other regional residency conferences should consider implementing a similarly designed program.
established high inter-rater reliability of two patient-centered communication rubrics to evaluate taking a medical history and self-care product counseling. The rubrics are reliable with both faculty and non-faculty evaluators.

Evaluating the Impact of an Interprofessional Childhood Obesity Course on Students’ Interprofessional Socialization and Valuing. 

Brianne L. Dunn, South Carolina College of Pharmacy, Aidyn Iachini, University of South Carolina College of Social Work, Elizabeth W. Blake, South Carolina College of Pharmacy, Christine Blake, University of South Carolina. Objectives: Childhood obesity is a significant health concern of importance to interprofessional education and practice. Because it is caused by a complex interplay of individual and social factors, solutions require health professionals to collaborate across disciplinary boundaries. Unfortunately, few educational efforts exist that help socialize health professional students to interprofessional teamwork particularly in relation to addressing the causes and determinants of childhood obesity. The purpose of this study was to evaluate the impact of a service-learning course on students’ interprofessional socialization, valuing, and other learning outcomes. Method: Thirteen students (87%) completed a pre- and post-test. The 24-item Interprofessional Socialization and Valuing Scale was used to assess self-perceived ability to work with others, value in working with others, and comfort in working with others. Students were asked to qualitatively reflect on how the course impacted their personal growth and future professional practice. Results: Results from paired sample t-tests indicated that students’ perceptions of their ability to work with others (t(12) = 2.69; p<0.05), value in working with others (t(12) = 3.35; p<0.01), and comfort in working with others (t(12) = 2.72; p<0.05) significantly increased. Themes that emerged from the qualitative data included enhanced knowledge of other professions and overall better preparation for leading and working in interprofessional teams. Implications: Findings suggest that an interprofessional course focused on a specific complicated health issue such as childhood obesity holds promise in preparing health professional students for interprofessional collaboration and teamwork. Additionally, it may foster development of knowledge and attitudes critical for interprofessional care of complex health concerns.

Evaluation of Advanced Pharmacy Practice Experience (APPE) Topic Discussions Utilizing Group Instructional Feedback Technique (GIFT). Lakesha M. Butler, Southern Illinois University Edwardsville. Objectives: To assess the effectiveness of APPE teaching during clinical faculty led topic discussions of common chronic conditions of ambulatory care. Method: Ambulatory care APPE pharmacy students with faculty preceptors participate in disease state topic discussions of varying formats as a group of approximately 6-10 students during each
rotation module. The discussion topics covered include diabetes, lipids, hypertension, asthma, heart failure and pain which are all facilitated by faculty preceptors. Students are assigned, prior to discussion, a drug class to discuss with group, provided patient cases and sample NAPLEX questions. Three GIFT assessments were conducted during three rotation modules by non-clinical pharmacy faculty and pharmacy residents after all topic discussions had been completed. Pharmacy students in groups of 6-10 (N=20 students) were instructed to individually reflect on instructional assessment questions of strengths, areas of improvement and discussion format followed by group discussion of question responses. Faculty preceptors were absent during assessment. The results were shared with each individual faculty preceptor in addition to general comments shared with all. Results: All students strongly agree or agree that the topic discussions enhanced their knowledge and enhanced their confidence in treating patients with the disease states discussed. Students indicated satisfaction and enjoyment with the format of the topic discussions and facilitators teaching style. Implications: Faculty led topic discussions are an effective instructional strategy during APPE rotations and will continue for future rotations.

Evaluation of Alcohol Consumption and Smoking Status Among Student Pharmacisths Throughout the Didactic Curriculum. Laurel A. Sampognaro, The University of Louisiana at Monroe, Adam Pate, The University of Louisiana at Monroe, Kristen A. Pate, The University of Louisiana at Monroe, Brittany Parker, Taylor Epperson. Objectives: To evaluate alcohol consumption and smoking status changes among student pharmacists throughout the three year didactic curriculum. Method: Consenting class of 2016 students completed an IRB approved health and wellness survey during the fall semester of their first (P1), second (P2), and third (P3) professional years. In this survey students were asked to report their alcohol consumption and smoking status. Responses were assigned individual codes in order to match data across all three years. The Friedman test was used for statistical analysis of results. Results: Alcohol consumption significantly changed with 55% (P1), 68% (P2), and 64% (P3) of respondents indicating they drink alcohol (p=.003). Of self-reported drinkers, the number of days per week respondents drank was 1-2 days (92%, 79%, 79%), 3-4 days (8%, 18%, 16%), 5-6 days (0%, 3%, 3%), and daily (0%, 0%, 3%) for P1, P2, and P3 years respectively (p=0.04). Number of servings consumed on days respondents drank did not significantly change and was reported as 1-2 servings (68%, 61%, 66%), 3-4 servings (21%, 24%, 24%), 5-6 servings (5%, 8%, 11%), and ≥7 servings (5%, 8%, 0%) for P1, P2, and P3 years respectively (p=0.25). Current smoking status did not significantly change and was reported as 0.07%, 0.07%, and 0.04% among P1, P2, and P3 years respectively (p=0.09). Implications: Student alcohol and smoking habits may change during their pharmacy school tenure. Attempts to monitor and positively impact negative habits should be considered in schools of pharmacy.

Evaluation of Introductory Pharmacy Practice Experience Service-Learning Reflections: Effect of Providing Instructor Feedback. Kathleen A. Packard, Creighton University, Rhonda M. Jones, Creighton University, Kelli L. Cooper, Creighton University, Ann M. Ryan Haddad, Creighton University, Amy M. Pick, Creighton University, Nicole White, Creighton University, Zara Risoldi Cochrane, Creighton University, Stacey K. Dull, Creighton University, Rachel Burke, Yongyue Qi, Creighton University. Objectives: Pharmacy students are encouraged to be reflective practitioners for future self-improvement. It remains unclear how to provide feedback and improve reflection quality. This study evaluated instructor feedback effectiveness longitudinally over the first two didactic years. Method: A total of 179 P1 students were included in this randomized, double-blind, controlled study. All completed four hours of service learning each year and subsequent reflection questions. Students were randomized into feedback (n=81) or control (n=98) groups. Blinded investigators categorized students’ reflections using a published scheme (Scale 1-6, 1-3 non-reflective, 4-6 reflective) and provided feedback to improve level of reflection. Investigators met annually to evaluate sample reflections for inter-rater reliability. One unblinded investigator electronically disseminated reflection scores and feedback to students in the intervention group at the end of P1 and P2 years. Mean reflection scores were compared between the groups pre-and post-intervention using ANCOVA. McNemar test was used to compare the percent change of students categorized as “reflective”. Results: There was no significant change in the mean reflection score pre- or post-intervention for either group (pre-control 2.9±1.1, post-control 3.1±1.2; pre-feedback 2.8±1.1, post-feedback 2.9±1.0 (P=NS)). There were no significant changes in percent of students categorized as reflective (pre-control 31.6%, post-control 30.2%; pre-feedback 30.9%, post-feedback 28.2%). Implications: Electronic dissemination of reflection grades and feedback did not affect reflection quality in subsequent experiences during the didactic curriculum. While this method has been effective for smaller groups in the advanced experiential setting, it may not be effective for larger groups in the didactic curriculum.

Evaluation of Pharmacy Students’ Knowledge and Confidence After a Geriatric Advanced Pharmacy Practice Experience. Krista L. Donohoe, Virginia Commonwealth University, Fawaz M Alotaibi, Virginia Commonwealth University, Aubrey G. Drisaldi, Virginia Commonwealth University, Tabatha N. Bonas, Plaza LTC Pharmacy, Edward M. Shibley, Plaza LTC Pharmacy, Patricia W. Slattum, Virginia Commonwealth University. Objectives: To assess changes in pharmacy students’ knowledge and confidence in their ability to achieve competencies during a Geriatric Advanced Pharmacy Practice Experience (APPE). Method: During 2013-2014, 30 Virginia Commonwealth University School of Pharmacy students completed a required 5-week Geriatrics APPE at Plaza LTC Pharmacy in Richmond, Virginia. All students completed a pre- and post-assessment to evaluate changes in knowledge and confidence in providing care to older adults. This included a 25-point knowledge-based assessment and a survey to ascertain students’ confidence in the following areas: communication, immunizations, geriatrics-specific pharmacotherapy knowledge, and the ability to fill and check monthly unit dose prescription cards. The average time required to accurately fill one unit dose prescription card before and after completing the rotation was also evaluated. Results: The average score on the knowledge component of the pre-assessment was 53.6%. After the 5-week rotation, the average improved to 88%. The average time required to fill one prescription decreased from 4 minutes at the beginning of the rotation to 2.45 minutes at the end of the rotation. The difference in both the knowledge assessment score and time required filled one prescription was statistically significant. Students reported a 66.6%-96.6% increase in confidence in the various areas measured by the end of the rotation. Implications: Having a required Geriatrics APPE for fourth year pharmacy students as a capstone to integrated geriatrics content in the first through third years provides an important opportunity to improve students’ knowledge and confidence in providing care to older adults.

Evaluation of Student Knowledge Following a Health Disparity Workshop Regarding Management of Patient Language Disparities. Carinda Feild, University of Florida, Sue Markowsky, University of Florida. Objectives: The objectives of the study were to evaluate student baseline and post-workshop knowledge following a health disparity workshop regarding requirements for treating patients who do
Evaluation of Student Outcomes Regarding Medication Therapy Management Education and Experiential Training Targeting Medicare Beneficiaries. Suzanne M. Galal, Jennifer Fong, Daniela Okino, Jenny Pham, Jeeta Chada, Rajul A. Patel, University of the Pacific, Joseph A. Woelfel, University of the Pacific, Ed Rogan, Cynthia S Valle-Oseguera, University of the Pacific, Yvonne Mai. Objectives: To evaluate the effects of implementing medication therapy management (MTM) training into an elective course as it relates to students’ self-perceived confidence, quiz scores (didactic setting) and efforts in providing MTM interventions (experimental setting). Method: Students enrolled in a two-semester Medicare Part D elective course, which contained both didactic and experiential components, were included in the study. Students were provided with faculty-developed MTM learning modules, and also completed the American Pharmacist Association MTM certificate program. Thirteen mobile clinics were held during the 2015 Medicare Open Enrollment period. Students at each clinic site helped beneficiaries select an optimal Medicare Part D prescription drug plan and provided MTM services. Data were collected on the number and types of drug-related problems (DRP) identified during each MTM intervention. Students completed a survey assessing their knowledge and confidence at multiple points during the class. Weekly drug quizzes were also taken by students. Results: Forty-five students comprised the study sample. In total, 655 patients were provided MTM interventions, and 716 DRPs were identified. Spearman’s Rho revealed a significant correlation (p<0.01) between student confidence before and after the MTM and experiential training. Students with better quiz performance identified significantly more DRPs. Implications: The incorporation of MTM training, and the application of knowledge through MTM interventions in the outreach setting, significantly increased student confidence and knowledge with MTM. As a result, such training enabled students to identify several DRPs in the experiential setting.

Evaluation of Student Pharmacists’ Perceived Versus Actual Level of Physical Activity. Kristen A. Pate, The University of Louisiana at Monroe, Adam Pate, The University of Louisiana at Monroe, Laurel A. Sampognaro, The University of Louisiana at Monroe, Taylor Epperson, Brittany Parker. Objectives: To evaluate student pharmacists’ perceived versus actual level of physical activity and changes in these parameters over the didactic curriculum. Method: Consenting class of 2016 students completed an IRB approved health and wellness survey during the fall semester of their first (P1), second (P2), and third (P3) professional years. Students were asked if they perceived their current level of physical activity as poor, intermediate, or ideal. Students also reported the number of days and time per week they participated in physical activity. These numbers were used to categorize students’ actual levels of physical activity according to the American Heart Association’s (AHA) definition of cardiovascular health. The information was used to assess changes in actual versus perceived physical activity levels during the didactic curriculum. A repeated measures ANOVA and Friedman test with Dunn’s multiple comparison test were used to analyze data. Results: Students’ perceived physical activity levels (poor, intermediate, ideal) did not change significantly between P1 (29%, 55%, 16%), P2 (37%, 45%, 18%), and P3 (36%, 45%, 19%) years (p=0.55). Students’ actual physical activity also did not change significantly between P1 (15%, 18%, 67%), P2 (14%, 29%, 58%), and P3 (15%, 12%, 73%) years (p=0.31). Students’ perceived level of physical activity was significantly lower than actual physical activity level during P1 (p<0.0001), P2 (p<0.0001), and P3 (p<0.0001) years. Implications: Student pharmacists may have a skewed perception of physical activity, providing an area for further research and education regarding AHA’s definition of cardiovascular health.

Evaluation of a Pharmacy Course Innovative Social Media Assignment. Melody Hartzler, Cedarville University, Kelly Wright, Cedarville University, Heather D Rose, Jeb Ballentine, Cedarville University. Objectives: To evaluate an innovative blog assignment in a self-care course. Method: In the Fall of 2014, a pre-survey was given prior to student orientation and a post-survey was administered during the last week of class. Students evaluated statements on a likert scale (SD to SA) on their perceptions of e-professionalism and use of social media (SM) as an informal learning environment. The post survey also addressed perceptions of the assignment. Students were given an assignment to write a blog article on a recent self-care topic to be published on the course website. They were evaluated on a likert scale rubric on eight different criteria. In addition bonus questions were added to the exams, based on the blog post material, to assess the informal learning environment. Results: Thirty-five students participated in this study with a mean GPA of 3.43 and a mean age of 22.8 years. Statistically significant changes from pre- to post-survey were observed for three statements on e-professionalism. There was a statistically significant positive correlation for students who had quality engagement on the blog and those that plan to use SM as a tool in their future practice to engage patients. (p = 0.033). On the post-survey, a majority of the students reported SM can be a useful tool to improve patient-provider relationships. The mean score for exam questions related to the blog post was 7.77 out of a possible 12 points. Implications: These results suggest students retained knowledge from the informal learning environment and see the value for future practice.

Evaluation of a Teaching Assistant Program for Third-Year Pharmacy Students. Courtney L. Bradley, University of North Carolina at Chapel Hill, Kelly L. Scolaro, University of North Carolina at Chapel Hill. Objectives: To determine if the design of a teaching assistant (TA) program for third-year pharmacy students (PY3s) provided opportunities for improvement in relation to their teaching abilities. Additionally, three assessment methods, student, TA, and faculty evaluations, were examined to determine if a relationship exists among them. Method: Selected PY3s served as TAs for first-year students during one semester of Pharmaceutical Care Lab. TAs facilitated small group learning once weekly for a total of fourteen weeks. Additionally,
TAs wrote one teaching reflection and developed a learning activity. Self-perceived confidence in their teaching abilities was assessed through surveys completed at the start and conclusion of the semester. These were analyzed using paired t-test. Friedman’s test and Spearman’s rho were used to compare means and examine correlations between end-of-semester student evaluations, TA self-evaluations, and faculty evaluations. Results: Twenty-one students served as TAs. Over the semester, there was a significant increase in confidence of overall teaching abilities (80.65 vs 87.31, p < 0.0001). There was a statistically significant difference between the three evaluation scores (z = 2.912, p = 0.004). No correlations were found between the three evaluation scores. Implications: The current TA program is effective as an educational experience to improve confidence in teaching abilities. Similar programs could be developed at other pharmacy or health professional schools. The lack of correlation among the three assessment methods highlights the importance of other forms of feedback in addition to typical end-of-semester student evaluations.

Evaluation of an eResource in Pharmacy Skills Courses. Theresa L. Charrois, University of Alberta. Objectives: As part of a pan-Canadian project on the integration of an online learning resource for informatics, pharmacy students trialled online informatics modules to determine their usefulness in pharmacy skills associated courses. Method: Integration of the eResource was conducted in one course in each of the first three years of the program. Evaluation included student satisfaction with the resource and student uptake based on mandatory versus optional use. Results: Of the 159 registered users for the domain on electronic resources, 77% completed the module on the eCPS, 72% on the Drug Product Database and 67% on the drug schedules. For second year students, 92% completed all required activities in the consumer health domain. In this domain, 91% of respondents felt the topics were relevant and 89% felt they increased their knowledge in consumer health. Students commented that the activities that included interactive scenarios were the most useful. Overall across all year levels, students found the eResource most beneficial when clearly associated with a specific assessment. Students felt that there needed to be more clear integration with other classroom activities, rather than a stand alone module. Implications: This evaluation will be useful for curriculum planning for courses being developed on informatics and their potential integration in skills lab. Further evaluation will be done to determine how best to integrate the eResource with assessment activities.

Evaluation of the Impact a Gaming Application has on Pharmacy Students’ Learning. Ann Biesboer, Concordia University Wisconsin, Joseph Rinka, Concordia University Wisconsin. Objectives: Determine if the use of a gaming application improves students’ learning in a pharmacotherapy course. Method: SmashFact is a customizable gaming application that allows educators to create study tools for students to use on smart devices. Faculty developed application-based games designed around pharmacotherapy learning objectives. Games were made up of multiple-choice questions in varying levels of difficulty. Students were offered the opportunity to purchase the gaming application (study group) or use a paper-based copy of the questions (control group) for studying. Study group and control group unit and final examination performances were compared. Results: In total, 23 students out of 94 in the class purchased the gaming application and were designated as the study group. The unit examination fail rates for the study group and the control group were 8.7% (n=2) and 15.5% (n=11), respectively. The study group passed the final examination at a higher rate (91.3%) as compared to the class average (86.2%). Overall, there was a trend towards improved examination performance in the study group compared to the control group. Implications: Use of the gaming application improved students’ learning. The use of this gaming application will be expanded in upcoming pharmacotherapy courses.

Evaluation of the Use of a Virtual Patient on Student Confidence in Performing Physical Assessment Skills. Catherine Taglieri, MCPHS University–Boston, Steven J. Crosby, MCPHS University–Boston, Joseph Ferullo, MCPHS University–Boston, Dhiren K. Patel, MCPHS University–Boston, Tulip Schneider, MCPHS University –Boston, Kristen Zimmerman, MCPHS University–Boston. Objectives: To assess student impressions about interacting with a Virtual Patient and confidence in their ability to complete a patient health history and perform physical assessment skills. Method: Three activities were assigned using a Virtual Patient computer program; an orientation, a health history and a pulmonary module. A survey was distributed prior to the program and then again after the last assignment. The purpose was to assess student impressions of the use of the virtual patient and measure the effect on student confidence related to performing and evaluating physical assessments. Results: Two hundred ninety two students of 334 enrolled completed the pre activity survey and 276 students completed the post activity survey. Student responses of “agree” or “strongly agree” to being confident for the tasks evaluated pre and post activity are as follows: Complete patient history; 86% vs. 79% (p < 0.001), complete physical exams; 36% vs 30% (p < 0.001), perform physical exam tests; 31% vs 28% (p = 0.032), ability to identify normal/abnormal findings, 75% vs 68% (NS). Forty percent of students “agreed” or “strongly agreed” that virtual patients realistically simulate a real patient in the pre survey before the activity versus 75% after the activity (p < 0.001). Implications: While the virtual patient is regarded as realistic simulation, students reported decreased confidence in performing physical assessment skills following use. Findings may be a consequence of underestimation of case complexity or may reflect limited practical experience. Incorporating the virtual patient into curricula may augment existing simulation-based teaching, presenting a more realistic clinical scenario, relative to practice.

Evaluation of ‘Do Bugs Need Drugs?’ Grade Two Educational Program about Antibiotic Resistance. Sharon Mitchell, University of Alberta. Objectives: In 2015, antibiotic resistance increasingly threatens world health. ‘Do Bugs Need Drugs?’, an educational program developed for second grade students focuses on 3 key messages: hand-washing, differences between bacteria and viruses and antibiotic resistance. Resources including an educational plan, stories, songs, poems, a puppet, activities, stickers and ‘Glo-germ®’, kit for hand-washing were developed. Our objective was to determine knowledge gains by Grade 2 students about program messages. Method: Parental consent and student assent were obtained. Surveys of 40 Grade 2 students were conducted pre and post-educational program. Five statements with responses Yes, No, Don’t Know assessed knowledge about the program’s messages: 1. Bacteria are different than viruses. 2. Antibiotics work against bacteria. 3. Antibiotics work against viruses. 4. Washing my hands helps to stop getting colds and the flu. 5. Using antibiotics to treat colds and the flu can cause antibiotic resistance. Results: Grade 2 students showed a 32% overall improvement in average total score for the five questions increasing from 50% to 82% correct responses pre and post presentation. With a paired Wilcoxon Signed Rank analysis of total scores p < 0.001. Individually, questions 1, 3 and 5 showed significant learning p < 0.001; pre-study 98% of grade 2 students knew hand-washing prevents colds and flu.
increasing to 100% post-study. **Implications:** The Do Bugs Need Drugs? Grade 2 Educational program represents an innovative and effective educational program addressing antibiotic resistance for Grade 2 students and provides healthcare professionals, students and teachers with resources available online to promote important health care messaging to our future generation.

**Examing Pharmacy Students’ Critical Thinking Abilities in the Context of Their Learning Styles.** Nicole Slater, Auburn University, Penny S. Shelton, Shenandoah University, Wallace A. Marsh, University of New England. **Objectives:** To determine if there is an association among pharmacy students’ learning styles, as defined by VARK (i.e., visual, aural, read/write, kinesthetic or multimodal) and H-PILS (Health Professionals’ Inventory of Learning Styles), critical thinking abilities as measured by CCTDI (California Critical Thinking Disposition Inventory) and HSRT (Health Sciences Reasoning Test) assessments, as well as final grade performance in multiple first-professional year (P1) courses. **Method:** Student pharmacists admitted to Shenandoah University, between 2011 and 2014, completed VARK, H-PILS, CCTDI and HSRT assessments during P1 orientation. Chi-square and ANOVA were used to retrospectively test for a relationship between VARK and H-PILS dominant learning styles (i.e., accommodator, assimilator, converger or diverger), and critical thinking capacity using categories as well as total scores. Furthermore, these parameters were used to explore whether learning styles or critical thinking were predictive of final grade performance in lecture- and applied case-based courses. **Results:** No correlation was found between learning styles and critical thinking abilities. VARK, H-PILS, and CCTDI were not predictive of course performance. However, a significant correlation (p = 0.008) was found between HSRT scores and performance in applied case-based courses. **Implications:** The range of critical thinking abilities varies greatly among applicants admitted to pharmacy school. This study demonstrates that student pharmacists with strong critical thinking skills perform better in applied case-based courses in the first professional year. Embedding activities designed to strengthen critical thinking in pre-pharmacy curricula may yield stronger applicants with a better foundation for success in pharmacy school.

**Exploring the Understanding of Scope of Practice through an Interprofessional Pharmacy and Pharmacy Technician Student Simulation.** Candace Necyk, University of Alberta. **Objectives:** To explore how pre-licensure exposure to a simulated, interprofessional patient care activity (IPCA) affects pharmacy and pharmacy technician students’ knowledge and attitudes regarding the scope of practice of each profession, how they can collaborate to provide patient care and how this knowledge may influence their future practice. **Method:** 131 pharmacy students and 24 pharmacy technician students participated in a simulated IPCA. A quasi-experimental, observational study design was utilized, and a 9-item survey, rated on a 5 point Likert scale, was administered to pharmacy and pharmacy technician students at the end of the activity. Within the survey instrument, students were asked to rate a series of 9 statements regarding their attitudes towards, and knowledge of, each profession’s scope of practice and the role of interprofessional collaboration in pharmacy practice. **Results:** 119 completed surveys were analyzed. Overall, there was a noticeable increase in the value of scores between questions assessing the students’ understanding of each profession’s scope of practice before and after completion of the activity. **Implications:** Student responses indicate that pre-licensure exposure to an IPCA does improve student knowledge and attitudes with regards to each profession’s scope of practice and how the two professions can collaborate to improve patient care. The positive results of this preliminary study support the use of IPCA as a means of providing health care providers with the skills to successfully practice in collaborative settings and merits further investigation with regards to developing certification programs and accredited curricula that reflect the evolving Pharmacy scope of practice.

**Facilitating Curricular Change: Preparing Faculty and Students for a Respiratory Module in a Non-Modular Program.** Colleen M. Brady, The University of British Columbia. **Objectives:** To inform faculty and students on the preparation involved in delivering a modularized curriculum, an integrated respiratory module was piloted. **Method:** A team of 14 faculty and staff began planning six months before the module launch. Preparing faculty involved clarifying responsibilities and time commitment, establishing essential content and objectives, and developing instructional and assessment strategies. Strategies for preparing students included providing a notice of the schedule in advance, conducting a detailed orientation session at the module start, and creating a comprehensive guide to the module in the online learning management system. Process and outcomes of the module were evaluated using pre/lecture faculty interviews; pre-, mid-, and post-module student focus groups; classroom observations; post-module debriefs; and a module evaluation survey. The results were disseminated in written and verbal reports to the Faculty. **Results:** Faculty were positive about the collaborative approach, integration of content, effective communication and strong module leadership. On the other hand, the planning process was felt to be time consuming and faculty development and technical support was lacking. On the course evaluation, students rated the module highly (4.5/5) on the question “considering everything, I learned a great deal in this module”. However, students found the module to be intensive in terms of time, content, and assessments. **Implications:** Piloting a single module was a useful approach to guiding efforts to modularize the whole curriculum. Deliberate attention to preparing both faculty and students will be beneficial in implementing the full curriculum change.

**Factors Associated with Course Remediation Success in a PharmD Curriculum.** Scott D. Hanes, Rosalind Franklin University of Medicine and Science, Stacie Moltzan. **Objectives:** For students failing a course(s) in the PharmD curriculum, course remediation or the requirement to repeat the course is often at the discretion of the student progression committee and/or administration. Unfortunately, few objective data are available to guide this decision. This study aims to determine if pre-admission and course performance factors are associated with successful course remediation. **Method:** Pre-admission data (demographics, academic performance) and course performance data were collected on pharmacy students enrolled during the first three didactic professional years at a single college of pharmacy program, failed at least one course and were offered course remediation. The subsequent success or failure of the course remediation was documented. A generalized linear mixed model was utilized to determine variables successful course remediation. **Results:** A total of 50 students failed at least one course with a total of 123 course failures. Variables significantly associated with course remediation success were remediation occurring greater than 4 weeks from incident course failure (OR 4.7, p = 0.031), remediation of a non-clinical sciences course (OR 6.09, p = 0.001), and pre-admission science grade point average (OR 4.31, p = 0.04). **Implications:** These results provide some guidance for colleges to consider when determining remediation processes for failing students. Additionally, this study suggests that if course remediation is offered, a delayed process may be more successful. Further research is needed to confirm these findings and assess the generalizability of the results.

**Factors Influencing Students Attending Class.** Michael G. Kendrack, Samford University, Katrina H. Mintz, Samford University. **Objectives:** Identify reasons students do not attend class sessions in addition to motivating factors for attending class. **Method:** After IRB approval,
fourth-year students received an email inviting them to participate in this voluntary, anonymous e-survey. Collected data included student demographics, reasons for not attending class, and motivating factors to attend class. The survey consisted of 39 multiple choice-type questions and two open-ended comment fields. Results: A total of 86 students completed the survey (72.3% response rate); 40% responded they rarely missed class. Primary reasons to regularly miss class were class scheduled having a 2+ hour break before/after class/lab (26.2%), class scheduled before an exam (27.4%), campus parking (15.5%), class after an exam (14.3%), and availability of the lecture capture system (10.7%). Primary motivating factors to attend class were faculty-related: led by faculty who were organized, added value to the class session, and told stories/gave examples that helped the student remember the information (72.6% each). Class content also was a reason to attend class, especially for more complex topics (66.7%) and introduction of new information (72.6% each). Class content was a reason to attend class, especially for more complex topics (66.7%) and introduction of new information (74.3%). The most common response students choosing not to attend class was faculty reading to the class (50%) followed by faculty distracting mannerisms (27.4%). No trends were identified among the few class was faculty reading to the class (50%) followed by faculty distracting mannerisms (27.4%). No trends were identified among the few

Implications: Multiple items affect and influence students' attendance to class, including class scheduling, exams in other courses, faculty characteristics, class content, and technology. These data are being used in faculty development programs plus to inform school teaching and learning policies and/or procedures.

First Impressions: How Interview Communication Indicators Correlate with Curricular Performance. Ashley N. Castleberry, University of Arkansas for Medical Sciences, Nalin Payakachat, University of Arkansas for Medical Sciences, Seth D. Heldenbrand, University of Arkansas for Medical Sciences, Kathryn K. Neill, University of Arkansas for Medical Sciences, Cindy D. Stowe, Sullivan University. Objectives: To determine whether communication skills assessed during admissions using the Multiple Mini-Interview (MMI) method correlate with performance on curricular assessments conducted via Objective Structured Clinical Examinations (OSCEs). Method: The MMI is conducted to assist admission decisions for the PharmD program. In addition to rating applicants on communication skills, strength of discussion, and suitability for pharmacy, interviewers indicated if anything `worried or concerned` them about the candidate (yes/no). A cohort of 111 students was categorized into 2 groups based on whether they received this indicator during the MMI. The difference between the groups in performance on OSCEs during PharmD coursework was examined using 2-sample t-tests and robust regression analyses. Results: Seventeen (15%) admitted students had MMI evaluations that documented some concern. This group of students performed significantly lower on the communication portion of OSCEs given in two Therapeutics courses (p<0.01) than students who did not receive this indicator (n=94). This difference was not seen on a summative exam given in the middle of the senior year. Implications: Students admitted with some concerns on MMI should be monitored and may require academic support for success on communication assessments. The association between instinctive first impressions of PharmD applicants during an MMI and student pharmacists’ OSCE performance should be explored in future research as it may be useful for early identification of students who may need support for developing/refining communication skills.

Flippin Lit: Evaluation of a “Flipped” Drug Literature Evaluation Course. Christopher A. Giuliani, Wayne State University, Lynette R. Moser, Wayne State University. Objectives: To evaluate a flipped drug literature evaluation course for first-year pharmacy students. Method: A drug literature evaluation course was flipped during the 2014 winter semester. Homework from 2013 was transformed into activities and lectures were transformed into multiple short YouTube videos. Assessment of the course was conducted by comparing examination scores between the 2013 and 2014 years and through a post course attitudinal survey. Continuous primary and secondary outcomes were analyzed using the student’s t-test or Pearson’s correlation. Linear regression was performed to adjust for factors previously shown in the literature to affect examination scores. Results: Ninety-nine and 94 students completed the course in 2013 and 2014. These students had similar GPA (3.06 vs. 3.07, p=0.85), but PCAT composite scores differed (73.9 vs. 80.8 p<0.001) between the 2013 and 2014 years, respectively. Average exam scores increased from 2013 to 2014 (75.6% to 86.1%, p<0.001). Linear regression controlling for GPA and PCAT composite scores further demonstrated that average examination scores were significantly increased (9.5%, 95% CI 7.4-11.5%, p<0.001) by the flipped classroom. Eighty-two of 94 students completed the post course survey in 2014. Compared to traditional lecture, 59.8% of students indicated they preferred the flipped course. Additionally, students felt the course was important, the in class activities were helpful, and that some of the YouTube videos could be improved. Implications: The flipped model should be considered in drug literature evaluation courses that seek to increase the amount of active learning in the classroom.

Gain of Knowledge and Confidence in Assessing and Treating Diseases in a Pharmacy Skills Laboratory. Jeanne E. Frenzel, North Dakota State University, Jenna Evenson, North Dakota State University, Margo Christopher, Heidi Eukel, North Dakota State University, Elizabeth T. Skoy, North Dakota State University. Objectives: To assess how knowledge and confidence of third year pharmacy students changes after performing active learning activities focused on the assessment and treatment of chronic disease states. Method: Third year pharmacy students enrolled in a pharmaceutical care lab were placed in pairs. The students rotated through eight stations, completing different learning activities. The stations focused on hypertension, hyperlipidemia, anaphylaxis, rheumatoid arthritis, cultural awareness, self-care, smoking cessation, and asthma. The students were asked to complete an 18 question pre-post survey to evaluate their knowledge and a 14 question pre-post confidence survey regarding the assessment and treatment of each condition. Results: Sixty-three (77%) out of 82 students completed the pre-post survey. Overall, scores for knowledge questions increased significantly by approximately 2 points. Using the Binomial Exact Test, students demonstrated a significant gain in knowledge for 16 of the 18 knowledge-based questions. Scores for confidence also increased. Of the 14 confidence questions, students' perceived confidence increased for 13 of the questions based on results of the Wilcoxon Signed Rank Test. Implications: Use of an active learning activity increased student knowledge and perceived confidence in assessing and treating diseases.

Global Citizenship, Policy, and Culture – Pharmacy Student Experiences in an International Specialization Elective. Cheryl A. Sadowski, University of Alberta, Cheryl Cox, University of Alberta, Lynette Shultz, Faculty of Education, University of Alberta, Marlene Gukert, University of Alberta. Objectives: To explore the student’s experiences and learning related to pharmacy practice and global citizenship in a specialization 3 week elective course taught in Italy. Method: This was an exploratory qualitative study. Students at the University of Alberta enrolled in Pharm 453 (Intercultural Exploration of Pharmacy & Health) between 2011 – 2013 were invited to participate after completing the course. Students who consented individually participated in a semi-structured interview regarding their experience. The interview was divided into 3 themes: 1. Pharmacy and culture, 2. Citizenship and the right to food, and 3. Impact of formal and informal

54
Global Health Education in US Pharmacy Schools. Gina M. Prescott, University at Buffalo, The State University of New York, Betty N. Vu, University at Buffalo, The State University of New York, William A. Prescott, University at Buffalo, The State University of New York. Objectives: To determine the extent to which global health is taught at US PharmD programs and to characterize what is being taught and how. Method: A 40-question online survey was pilot-tested and sent to all accredited and candidate status US PharmD programs. The survey instrument assessed: demographics; global health in required didactic and elective coursework; experiential learning in global health and/or international settings; and, medical mission trips. Descriptive statistics were used to analyze the data. Results: A total of 55/127 programs responded to the survey (response rate 43.3%). The term ‘global’ was integrated into 49.1% of responding programs’ mission statements and the majority of programs had established formal (72.7%) and/or informal (70.9%) affiliation agreements. Fifty-one schools (92.7%) integrated global health into their curriculum. Twenty-four programs (43.6%) indicated global health topics were included within their required didactic curriculum (mean = 5.4 contact-hours), within which the most commonly taught topics were: cultural competency (81.8%), complementary/alternative medicine (50%), global health non-communicable disease (40.9%), and HIV (40.9%). A global health elective was offered by 57.7% of programs (mean = 3 contact-hours). Global health experiential learning and medical mission trips were offered by 78.8% and 65.4% of programs, respectively all of which were international in scope. Implications: Global health education is integrated into more than 90% of PharmD programs, with variability in the timing and curricular content. Consensus is needed regarding the extent to which global health should be taught, and what content should be covered. Expanding didactic curriculum focused on global health should be considered.

Guidance of Descriptors in Facilitators Assigning Scores within a 100 Point Scale. Kim G. Adcock, The University of Mississippi, Shirley M. Hogan, The University of Mississippi. Objectives: In a problem-based learning course, group participation is evaluated weekly by facilitators using a standardized tool. The grading scale was converted from a Likert to a 100 point scale prior to the 2009-2010 academic year causing a grade shift towards the upper end of the scale. To provide facilitators with guidance on assigning scores that equate to expectations, a sliding bar was implemented in the 2011-2012 academic year followed by the addition of descriptors in 2012-2013. This evaluation reviews the scores before and after implementation of this change. Methods: For each item on the tool, a sliding bar was added with a pop-up description that correlates to the score the facilitator selected. The description outlines the performance expectation that equates with each score. Overall weekly performance scores were compared by academic year. Results: To compare means, we used a mixed model for the analysis with group as a fixed effect and both block and week as random effects and treated as nuisance parameters. The analysis determined differences in weekly average scores, overall, between the groups while adjusting for potential block and week effects. No significant difference was found between years 2009-2011 and 2011-2012; however, approximately a 1 point increase in the average weekly score from both 2009-2011 (p = 0.0003) and 2011-2012 (p = 0.0091) to the post intervention years of 2012-2014 was noted. Implications: Addition of descriptors to the sliding bar did not provide the expected shift toward a more standardized mean. Therefore, facilitator development and not just tool enhancements are needed.

Healthy People 2020 – Assessment of Pharmacist Priorities. Lisa J. Woodard, Washington State University, Abby A. Kahaleh, Roosevelt University, Hoi-An Truong, West Coast University, James Nash, Regis University, Linda K. Ohri, Creighton University, Hyma P. Gogineni, Western University of Health Sciences. Objectives: To identify perceptions of pharmacy educators on the priorities and roles of pharmacists in meeting Healthy People 2020 objectives. Method: The AACP Public Health SIG Development Committee conducted a literature review to examine the level of pharmacist involvement in meeting the Healthy People 2020 topics/objects. Based on the review and experts’ opinions, the topics were grouped into 9 categories. A 14-item survey was developed with 3 main sections: priority of categories to improve the nation’s health, importance of the pharmacist role to achieve the category objectives, and demographics characteristics. A Likert scale of 1 = lowest priority to 5 = highest priority was used to ask respondents to rank their top 5 categories. The electronic survey was sent to members of the AACP Public Health SIG. Results: A total of 600 individuals received the survey and 170 submitted responses for a 28% response rate. The top 5 prioritized categories, with mean scores, for improving the nation’s health were chronic diseases (3.59), health care services (3.35), life style (3.12), neurologic health (3.02), and genomics (3.00). The top 5 prioritized categories, with mean scores, for the role of the pharmacist in helping to achieve the component objectives were chronic disease (3.94), health care services (3.03), life style (2.92), prevention and wellbeing (2.92), and neurologic health (2.92). Implications: Identified priorities can guide educators to better prepare student pharmacists and engage practitioners to increase and document efforts in meeting Healthy People 2020 objectives and advance pharmacists’ role in public health.

Identifying Students’ Perceptions of Community Within, and Need for an Online Veterinary Pharmacotherapy Course. Ann M. Philbrick, University of Minnesota. Objectives: Veterinary pharmacy is an emerging industry, yet its place within pharmacy curricula is generally limited. Here, a newly formed online veterinary pharmacotherapy course is described, and student perceptions of classroom community and need for such a course are reported. Method: Veterinary Pharmacotherapy was a two credit elective offered to third and fourth year pharmacy students, delivered online through a Learning Management System. Evaluation of the course was completed through the optional standard course evaluation at the end of the semester, with questions added to reflect on components integrated to foster community within the course. Results: Fourteen of 34 total students completed the course evaluation. All students reported they would recommend this course to a classmate. The online nature of the course was viewed favorably, with most students indicating the reason they took this course was because it was offered online. Weekly topic discussions and emails were also viewed favorably, but a video accompanying the email was not beneficial. The two main reasons students reported enrolling in the course was a strong interest in animals and a belief that pharmacy
students should be educated on this patient population. **Implications:** The positive rating of this course, in addition to the reflection of students that animals were an important patient population to learn about, should be a catalyst for colleges and schools of pharmacy to offer more opportunities for students to learn about, and prepare to treat, this important patient population.

**Impact of Different Team Formation Methods on Team Functioning in a Team Based Learning Self-Care Course.** Patricia H. Fabel, South Carolina College of Pharmacy, Kristy L. Brittain, South Carolina College of Pharmacy, Whitney Maxwell, South Carolina College of Pharmacy. **Objectives:** To determine if teams formed using the Birkman Method® improves team functioning in a Team Based Learning (TBL) course compared to random selection. **Method:** Self-Care and Complementary Medicines (SCCP750) is a TBL course at the SC College of Pharmacy. The Birkman Method® is a validated self-perception, social perception, and occupational interest assessment tool being used by the college. The teams in SCCP750 were formed using 3 methods: random selection by a faculty member (random), based on their Birkman Method® results (Birkman), and based on having received intensive Birkman Method® training in another course (intensive). The SCCP750 course coordinators were supplied with a list of teams and were blinded to how the teams were selected. Each student completed the Team Functioning Assessment (TFA) midway through the semester. **Results:** A total of 184 students were divided into 34 teams: 15 Birkman teams, 4 intensive teams, and 15 random teams. At midpoint, 46.3% of the Birkman students reported conflicts being present. This is compared to 35% and 46.9% of the intensive and random students, respectively. The Birkman teams reported an average of 2.5 conflicts per team at midpoint. This is compared to 0.75 and 6 conflicts per team for the intensive and random teams, respectively. **Implications:** These data suggest that when a faculty member uses the Birkman Method® to form teams in a TBL course there are fewer conflicts amongst the team members than when the teams are formed randomly.

**Impact of a Master of Business Administration (MBA) Degree on the Career of a Pharmacist.** Christopher Daly, University at Buffalo, The State University of New York, Sarah E. Tierney, Erin O’Brien, University at Buffalo School of Management, Karl Fiebelkorn, University at Buffalo, The State University of New York, David Jacobs, University at Buffalo, The State University of New York. **Objectives:** To characterize the benefits of obtaining an MBA degree on the career of a pharmacist, and describe respondents’ perceptions of pharmacy and MBA degrees on entry level and current positions. **Method:** This was a cross-sectional survey of pharmacy graduates from the University at Buffalo (UB) who attained a MBA degree. Thirty-item electronic survey was developed through collaboration with the UB School of Management. The survey utilized Likert scale, sliding scale, and multiple answer questions. Wilcoxon signed-rank tests assessed differences in means and chi-square for differences in proportions. **Results:** A total of 68/115 pharmacists responded to the survey (59% response rate). There was a diversity of respondents: 41% completed both degrees between 1965-1989, 29% between 1990-1999, and 31% after 2000. Following completion of pharmacy and MBA degrees, respondents’ entry level setting included pharmaceutical industry (28%) followed by chain pharmacies (21%). There was an increase in utilization of the MBA degree from the respondents’ entry level to their current positions (32% vs. 49%, p<0.001). The MBA degree was increasingly helpful in obtaining respondents’ current position as compared to their entry level (47% vs. 27%, p=0.0001), with a pharmacy degree being more helpful in entry level attainment. Irrespective of entry level or subsequent position, 85% of respondents believed earning both degrees helped in career advancement (p=0.77) and 80% of respondents would recommend earning an MBA in addition to a pharmacy degree (p=0.6). **Implications:** Attainment of an MBA degree was perceived to be useful in the progression of the career of a pharmacist.

**Impact of a Minimalistic Approach to Didactic PowerPoint Presentations Performed in a Drug Information Course.** Christopher S. Wisniewski, South Carolina College of Pharmacy. **Objectives:** To determine the impact of using a PowerPoint presentation style that utilizes visually attractive slides and streamlined handouts, created in Word, on student performance and educator evaluation in a drug information (DI) course that focuses on teaching critical literature evaluation. **Method:** In a 1-semester, stand-alone DI course, the primary faculty member modified PowerPoint presentation slides from a traditional bullet-point format, used in 2013, to a format utilizing captivating images and minimal words, used in 2014. Student handouts were transitioned from 3-slide handout format to outlined Word documents. Student performance, via overall class average and exam scores, and educator evaluation scores were compared between the 2013 and 2014 semesters. **Results:** Overall class average fell slightly from the 2013 semester to the 2014 semester (86.65% vs. 85.91%). The 2 exams administered during each semester were similar between years; the first exam score improved from 2013 to 2014 (85.81% vs. 87.80%), but the second exam score fell (84.88% vs. 84.08%). Teacher evaluation, as assessed by the criterion “The instructor was an effective teacher” on the school’s annual student feedback evaluation (scale of 1 = strongly disagree to 5 = strongly agree), rose from a mean of 3.15 to 3.63. **Implications:** While modification to a minimalistic PowerPoint presentation style did not improve student performance, student evaluation of the instructor indicated an improvement in educator effectiveness. The instructor felt the change in presentation style was more fun and better engaged students.

**Impact of a Pre-Pharmacy Mock Interview Training on Admission Interview Performance.** Katherine E. Corsi, The University of Rhode Island, Katherine K. Orr, The University of Rhode Island, Lisa B. Cohen, The University of Rhode Island. **Objectives:** To describe pre-pharmacy admission mock-interview preparations and compare de-identified scores from 2014 of those who completed the mock-interview process versus those who did not. **Method:** An admission interview is required for pre-pharmacy students seeking admission into the professional pharmacy program. Prior to interviewing, a voluntary mock-interview session supports students by providing strategies for the group interview portion of the admission process. To reach this objective, students attended a training lecture and a mock interview. The information session reviewed what to expect on interview day, interviewing strategies, and proper dress. Professional students facilitated the mock interview and evaluated candidates on eye contact, voice level and pace, and attire. Feedback was provided to all mock interview participants. On the day of formal interviews for admission, interviewers were not told which students participated in the mock interview session. Actual interview scores were compared between students that participated in the presentation and those who did not using a two-tailed t-test for equality of means. **Results:** Fifty-two of 132 (40%) students participated in the mock interview session. Students that participated had a score of 20.5 +/- 2.8 while students who did not had a score of 19.1 +/- 2.8. The mean difference was -1.4 points within a 95% confidence interval (-2.4 to -0.5) and p = 0.004. **Implications:** There is a correlation between higher admission interview scores and mock-interview training. It further enhances preparation of interpersonal communication skills that are applicable to the interview, as well as professional pharmacy practice.
Impact of a Revised Parenteral Product Program on Students’ Proficiency. Britney A. Meyer, South Dakota State University, Jane R. Mort, South Dakota State University, Janet R. Fischer, South Dakota State University, Tarryn Jansen, South Dakota State University, Jodi R. Heins, South Dakota State University. Objectives: Determine the impact of a revised parenteral product program on students’ skills and knowledge of parenteral product preparation. Method: Previously, the sterile product curriculum contained observational instruction with limited hands on training during 3 labs and introductory practice experiences. An innovative parenteral program (implemented spring 2013) increased hands on training for second year students to a total of 6 labs, which included several simulations in acrylic hoods, peer and instructor observation, and a high stakes assessment. Introductory practice experiences added required preparation of 20 sterile products and analysis of a health system’s parenteral practice. Third year course work added 3 additional hood simulations with peer evaluation. Impact was measured via a knowledge quiz and skills assessment (35-point rubric) pre and post implementation. Results: Students performed parenteral compounding skills in the simulated hood correctly more often after implementing the innovative parenteral product program. Specific improvements were in the following areas: positioning items (47.9% correct pre vs. 90.1% correct post), alcohol swab technique (77.9% pre vs. 94.8% post), needle use (92.0% pre vs. 96.5% post), no violation of first air (4.2% pre vs. 24.1% post), major violations of first air (34.7% pre vs. 20.3% post) and final check (23.5% pre vs. 76.3% post). All differences were significant (p-values <0.001). Student knowledge scores did not significantly change (mean score 86.9% pre vs. 88.2% post, p=0.34). Implications: The revised and innovative program increased students’ skills and proficiency in preparing parenteral products while knowledge remained unchanged. Assessment results highlight additional opportunities for future improvements.

Impact of a Stand-Alone Communication Courses Integrated with Pharmacotherapy Courses and IPPEs. Chelsea McNair, Dakota State University and South Dakota State University. Objectives: 1) To determine how stand-alone communication courses impact student preparedness for and achievement of patient-centered communication skills and 2) to assess students’ attitudes regarding learning methods utilized in the courses. Method: Prior to our renewed curriculum in 2012, communication skills and assessments were incorporated into a professional skills development course which also incorporated self-care pharmacotherapy content. The new curricular approach includes two stand-alone, Patient-Centered Communication courses in the first professional year. The courses utilize active-learning, OSCE-type evaluations with standardized patients and integrate with IPPEs and Pharmacotherapy courses including three joint evaluations. Two years after implementation, student achievement of patient-centered communication skills was evaluated by aggregate performance on seven OSCE-type course evaluations. Student preparedness for communication-related activities and attitudes about the learning methods were evaluated by a survey using a 5-point Likert scale. Third professional year (P3) students admitted prior to the renewed curriculum were also surveyed. Results: 319 students completed the courses; 223 (70%) completed the survey. Almost all students met or exceeded expectations on all OSCE-type course evaluations. The majority of students who completed the courses felt well or very well prepared to perform 15 of 18 communication activities after the first curricular year. Attitudes regarding learning methods were positive. Compared to P3 students (n=127), the majority of preparedness scores and all attitude scores were more positive (p<0.05). Implications: Implementation of stand-alone patient-centered communication courses was effective at achieving patient-centered communication outcomes and improved student preparedness for communication-based activities. Student attitudes were positive with the new curricular approach.

Impact of a Weight-Loss Activity on Student Pharmacists’ Perceptions of Challenges Associated with Lifestyle Modification. Lucio Volino, Rutgers, The State University of New Jersey, Rupal Mansukhani, Rutgers, The State University of New Jersey, Leon E. Cosler, Albany College of Pharmacy and Health Sciences, Mary M. Bridgeman, Rutgers, The State University of New Jersey, Marcus G. Sturgill, Rutgers, The State University of New Jersey. Objectives: To evaluate the impact of an interactive activity on student pharmacists’ perceptions regarding weight loss and obesity. Method: Third professional year students in the required Self Care and Home Care course were instructed to document caloric intake on paper for two days prior to a lecture on obesity and calorie counting. Students were then directed to continue tracking caloric intake using mobile technology (MyFitnessPal application) for four additional days. Baseline, pre-lecture, and post-activity surveys collected demographic data, self-evaluations on obesity-related knowledge, perceptions of weight loss, utility of mobile technology, and overall activity value. Results: Seventy-nine percent of students completed all three surveys (n=150). After completing the activity, students felt significantly more comfortable creating an initial weight loss plan (p<0.001), and displayed significantly more empathy toward patients trying to lose weight (p<0.001). Most students (93.3%) would recommend mobile technology to patients trying to lose weight. There was a trend from baseline (90.7%) to post (95.3%) assessments toward a student belief that mobile technology encourages patients to lose weight but no significant difference was detected. Seventy-eight percent found the activity valuable. Implications: This project created an opportunity for students to experience the difficulties faced by individuals trying to lose weight and fostered empathy when counseling a patient on lifestyle modifications. Further, this activity exposed participants to novel technologies available to support patients in their weight loss attempts and provided first-hand experience in tracking calories. This activity could easily be reproduced by faculty teaching obesity or weight loss at other pharmacy schools.

Implementation and Assessment of a Professional Skills Development Course Handbook for First Year Pharmacy Students. Christie H. Kim, Midwestern University/Glendale, Sarah Dodge, Midwestern University/Glendale, Shareen El-Ibiary, Midwestern University/Glendale, Mary K. Gurney, Midwestern University/Glendale, Stephanie J. Counts, Midwestern University/Glendale. Objectives: 1) To assess use of a faculty-created professional skills handbook by first-year pharmacy students and 2) to correlate handbook use with students’ grades in a professional skills development course. Method: First-year pharmacy students enrolled in a professional skills development course completed an 11-item survey, assessing their perceptions and usefulness of a professional skills handbook. Additional data entered into Qualtrics™ was analyzed by IBM SPSS v22 software and used to determine if the frequency of handbook use via Blackboard™ had an effect on students’ final course grades and standardized-patient interview scores. Descriptive and non-parametric statistics were utilized and significance was set at p = 0.05. The survey, approved by the Institutional Review Board, was anonymous and voluntary. Results: The handbook was accessed 1,622 times by 151 students (mean=11 times/student) with usage peaking before patient interviews and class workshops. Response rate was 93% (n=140). Of the responders, 67% would recommend the handbook to future pharmacy students. Topics such as Preparing for the Patient Interview, Assessment Tools, and
Implementation and Assessment of an Online Elective Course Focusing on Current Topics in Professional Pharmacy. Kristen A. Pate, The University of Louisiana at Monroe, Adam Pate, The University of Louisiana at Monroe, Laurel A. Sampognaro, The University of Louisiana at Monroe, Jessica H. Brady, The University of Louisiana at Monroe, David J. Caldwell, The University of Louisiana at Monroe. Objectives: To describe the course design and assessment of an online elective course focusing on pharmacy current topics and evaluate if course involvement improved student pharmacists’ awareness of and interest in current topics affecting the profession of pharmacy. Method: This online elective included weekly modules of current topics affecting the profession of pharmacy (e.g. pharmacist provider status, team based health care and decision making), along with a longitudinal final project in which student groups created their own current topic module. Each module consisted of assigned reference materials and required online forum posts to answer discussion questions and share professional opinions. Student achievement of curricular outcomes and course objectives was assessed utilizing performance on weekly module forum posts, a final quiz, and pre- and post-course surveys. Responses were analyzed using a paired, two-tailed student’s t-test. This project was deemed exempt by the University Institutional Review Board. Results: Response rates for the pre- and post-survey were 92% and 75% respectively. Student self-rated awareness and desire to stay updated on pharmacy current topics increased significantly (p < 0.001). Ten of the 12 course outcomes evaluated demonstrated significant differences from pre- to post-survey. Mean assignment scores were 93.7% for the weekly module forum posts and 79.6% for the final quiz, with the course average being 91.8%. Implications: This elective demonstrates a way to incorporate development of student interest and awareness of current topics affecting the profession of pharmacy into the curriculum, either as an elective or using elements of this course design as a component of other courses.

Implementation and Evaluation of an Elective Dossier Analysis and Formulary Management Course. Silvia P. Petkova, Purdue University, Amy H. Sheehan, Purdue University. Objectives: To implement a dossier analysis and formulary management elective course and evaluate its impact on students’ confidence in developing formulary recommendations. Method: A two-credit, three-week, intensive elective course was developed in which students worked in teams to analyze a manufacturer-prepared evidence dossier and present a formulary recommendation. All students enrolled in the course were invited to participate in a pre- and post-course survey instrument regarding their knowledge and confidence with dossier analysis and formulary management. Questionnaire items were tied directly to the objectives of the course. Results: A total of 22 students enrolled in the elective course during the fall semester of 2014. The response rates for the pre- and post-survey instruments were 100% (22/22) and 91% (20/22), respectively. At baseline, only 9% (2/22) of respondents indicated a good to excellent strength in their ability to accurately interpret pharmacoeconomic data, while 50% (11/22) and 55% (12/22) indicated good to excellent strength in their ability to demonstrate effective public speaking and presentation skills and reliably analyze drug information sources, respectively. At the end of the semester, there was a significant increase in the percentage of respondents indicating good to excellent strength in their ability to accurately interpret pharmacoeconomic data (50%, 10/20), demonstrate effective public speaking and presentation skills (85%, 17/20), and accurately and reliably analyze drug information sources (95%, 19/20). Implications: Implementation of an intensive elective significantly improved student confidence in their ability to accurately analyze and formulate evidence-based formulary recommendations.

Implementation and Evaluation of an Online Informatics Resource through an E-Health Team Challenge. Marion L. Pearson, The University of British Columbia, Judith A. Soon, The University of British Columbia, Alan Low, The University of British Columbia, Matthew P. Chiang, The University of British Columbia, Jaswinder Kaur, The University of British Columbia. Objectives: The Association of Faculties of Pharmacy of Canada recently developed an informatics e-resource that Canadian pharmacy schools pilot-tested during 2014/15. At the University of British Columbia, one initiative to motivate voluntary use was implemented in a management course. An “e-Health Challenge” was issued, augmenting a team project to develop a business plan for a novel patient care service. Method: Previous research identified e-visits, health record e-views, prescription e-refills, e-scheduling of appointments, and remote monitoring as services patients value. Students participating in the e-Health challenge were required to incorporate one such technology into their project and submit a description of their patient service and the associated technology, including target population, costs, benefits, challenges, and security considerations. They were asked to review selected e-resource sections and complete pre- and post-use surveys. Web analytics tracked e-resource usage. Results: Three teams (19/121 students) participated in the challenge. Proposed technologies included a mobile application for recording progress towards heart health goals, a web-based service to consolidate personal health information, and near field communication to advise pregnant and lactating women on over-the-counter product selection. One or more members of each team accessed the e-resource. There was a consensus that e-resource content was well-organized, but diverse opinions on navigability and on relevance and level of content. Self-ratings of informatics knowledge increased (40%) or remained stable (60%). Implications: The e-Health Challenge provided motivation for some students to access an informatics e-resource and be thoughtfully creative with e-Health technology. The e-resource was relatively well accepted and helped some students develop informatics competencies.

Implementation of Active Learning Strategies with Clinical Applications in Advanced Pathophysiology. Steven C. Stoner, University of Missouri-Kansas City, Mark E. Patterson, University of Missouri-Kansas City, Andrew J. Smith, University of Missouri-Kansas City, Melissa C. Palmer, University of Missouri-Kansas City. Objectives: Prior to 2010, Advanced Pathophysiology was taught by faculty outside the School of Pharmacy (SOP). When SOP faculty began teaching the course in 2010, instructional methods were changed and later active learning case vignettes were introduced. The objective was to determine the extent of student course satisfaction change between two time periods: 1) the first two years when the course was taught by SOP faculty, and 2) the three years following case vignette introduction. Student performance and discriminative validity were assessed on recall and application based questions. Method: Student course assessments were collected at semester end from 2009-2014. Exam questions from 2010-2014 were categorized into two question types: application or recall and the mean percentage of students answering correctly were compared. For discriminative validity, the point biserial correlation (RPBI) was collected for each question and
Results: Overall course evaluations improved, with students specifically reporting that course objectives were better met. Using a 5-point Likert-scale, the 2009 average was 3.92 and have averaged 4.66 (4.29-4.82) from 2010-2014. The addition of clinical vignettes (2012) did not impact course evaluation scores. Despite the active learning integration, student performance on application and recall questions did not significantly change, though the RPBI for application questions numerically improved (+0.03). Implications: Advanced pathophysiology course satisfaction scores increased once taught by SOP faculty. Introduction of active learning techniques did not impact course satisfaction and student performance on application and recall questions remained consistent (p=0.57 / p=0.49), however application questions comprised only 13% of the total questions.

Implementation of a Customizable Electronic Rubric for the Evaluation of Written Treatment Plans. Courtney S. Davis, The University of Mississippi, Scott S. Malinowski, The University of Mississippi, Daniel M. Riche, The University of Mississippi, Gary D. Theilman, The University of Mississippi, Shirley M. Hogan, The University of Mississippi, Jay Pitcock, The University of Mississippi, Kayla R. Stover, The University of Mississippi, Joel Pittman, The University of Mississippi, Anastasia Jenkins, The University of Mississippi. Objectives: To evaluate faculty perceptions and student performance after the implementation of a new tool for grading written treatment plans. Method: The Problem-based Learning pharmacotherapeutics course includes a weekly written treatment plan, in which multiple faculty are involved with grading. This creates the potential for inconsistency. A new tool was designed for grading these plans to improve grader consistency expectations. The previous tool allowed each grader to assign a score for their section based on personal judgment, with minimal guidance. The new tool used a standard template for a rubric which could be modified and customized by the grading team leader. Following use of the new tool, a perceptions survey was administered to graders, and student performance was also assessed. Results: There were 33 responses to the survey. Compared to the previous tool, 54% of respondents indicated that consistency of grading had improved, 42% believed there was no change, and 3% indicated that it had somewhat decreased. In terms of perceptions of consistency in expectations of students from week to week, 60% believed there was improvement, and no respondents perceived a decrease in consistency. There was a mixed response in regards to grading efficiency related to time. Average student performance on treatment plan assignments was similar with both versions of the grading tool (81.0% ± 4.0 SD vs. 82.2% ± 4.4 SD). Implications: Most faculty perceive that treatment plan grading consistency and student expectations have improved with the implementation of this new tool, without a negative impact on student performance.

Implementation of a Pharmacotherapy-Patient Care Management Practicum for Assessment of Advanced Pharmacy Practice Experience Readiness. Sandra Benavides, Nova Southeastern University, Jaime Riskin, Nova Southeastern University, Nathan Unger, Nova Southeastern University, Jennifer Steinberg, Nova Southeastern University. Objectives: The recent and proposed accreditation standards for the doctorate of pharmacy call for assessments of student’s progression toward achievement of ability based educational outcomes. One such assessment includes readiness for advanced pharmacy practice experiences (APPEs). Nova Southeastern University College of Pharmacy currently assesses knowledge through a capstone exam upon completion of didactic courses. In order to assess skills preparedness, the Pharmacotherapy-Patient Care Management (PT-PCM) practicum was implemented. Method: A three week final skills assessment was designed for administration to students completing the PT-PCM course sequence. The assessment included patient interview and medication history construction, patient case evaluation, medication order verification, medication dose adjustments in special populations, physician phone call, patient counseling and literature evaluation. Rubrics for each activity were constructed to ensure consistency between faculty graters. Students were required to pass the practicum to pass the course. It was graded as pass/fail and required 70% to pass. The overall practicum grade was 10% of the PCM grade. Results: A total of 221 students completed the practicum with the assistance of faculty from the Department of Pharmacy Practice. The average grade on the practicum was 85 (± 5.3%) with a range of 70-95%. Student feedback was generally positive but some expected a more challenging examination. Implications: The practicum indicated students were prepared to complete tasks they may encounter in APPEs. However, based on the limited experiences with some of the activities throughout the course sequence, the PCM laboratory was redesigned to better align expected skills.

Implementation of a Simulated Electronic Health Record In A PharmD Program: Successes And Challenges. Benjamin Chavez, Pacific University Oregon, R. Briggs Turner, Pacific University Oregon, Nicole Wegryn, Pacific University Oregon, Bridget Bradley, Pacific University Oregon, Kristine B. Marcus, Pacific University Oregon. Objectives: Providing patient case simulations that mimic practice in pharmacy curriculums can be challenging. Our program implemented an educational electronic health record (EHR), called NeehrPerfect, which gives classroom students hands-on experience interacting with instructor-designed patient records. Method: A survey was conducted prior to EHR implementation and after one semester of experience to gather students’ comfort level with EHRs as well as their perceived usefulness of using an EHR in the classroom. Results: The EHR was used primarily in skills-based courses with the intent of having students navigate and evaluate a patient chart prior to an activity. A total of 90/93 students responded to the initial survey, with 67% of students stating they had minimal to no prior experience using EHRs. The initial survey results showed that 46% of students did not feel comfortable using EHRs, which decreased to 8% after one semester (P < 0.001). Perceived improvement of individual skills was assessed during the survey and will be reported. All respondents initially “strongly agreed” or “agreed” that using an EHR in the classroom was important for their pharmacy education. However, that number decreased to 95% in the follow-up survey (P = 0.06). Specific skills that improved included screening, identifying, and prioritizing problems using an EHR (p < 0.001). Implications: The use of a realistic EHR program in the classroom improved students’ comfort with EHR, and may be a worthwhile strategy to increase student pharmacists’ familiarity with health informatics. Challenges and successes with implementation from students’ and faculties’ perspective will be discussed.

Implications and Student Perceptions of Peer-Led Teaching Activities in a Capstone Pharmacy Course. Michelle R. Musser, Ohio Northern University. Objectives: Pharmacy students often have limited opportunities to develop teaching and evaluation skills needed for future practice. Fifth year pharmacy students (in a 0-6 program) participated in peer-led teaching activities within a capstone course, allowing assessment of perceptions and value of such activities. Method: Students participated in 2 peer-led teaching activities; an individual presentation evaluating a landmark trial and a group lecture evaluating a new drug product. Peer evaluations were completed for the lectures. Presentations were graded by faculty using a standard rubric and content was assessed on a course examination. Students
Importance of the Debriefing Session in a Simulated Interprofessional Education (IPE) Experience. Catherine L. Hatfield, University of Houston, Nadia Ismail, Baylor College of Medicine, Cayla R. Teal, Baylor College of Medicine, Nancy D. Ordonez, University of Houston, Elizabeth A. Nelson, Baylor College of Medicine. Objectives: Our objective was to determine if students who go through a simulated IPE find the debriefing session to be as beneficial as the simulated encounter. Method: Senior level medicine, nursing and pharmacy students participate in a four-part IPE which includes (1) an ice-breaker, (2) a discussion of the scenario, (3) an encounter with a standardized patient (SP), and (4) a debriefing session. The debriefing session was standardized by using a facilitator’s guide and trained facilitators. After the IPE, students take a survey and are asked “How effective was the simulated encounter with a family member for helping you consider how different disciplines may contribute to patient care?” and “How effective was the debriefing and discussion with other disciplines for helping you consider how different disciplines may contribute to patient care?” Results: Data from medical (n=30) and pharmacy (n=57) students was available and analyzed. The simulated encounter was logged as effective (defined as a Likert rating of 5, 6 or 7) in 96.7% (29/30) medical students and in 94.7% (54/57) pharmacy students. The debriefing was logged as effective in 93.3% (28/30) medical students and in 94.7% (54/57) pharmacy students. The medical and pharmacy students found both the simulation and the debriefing to be equally effective (p=0.82 and p=0.58, respectively). Implications: The debriefing session after an interprofessional experience such as patient case simulation can be just as important as the simulation experience itself. The standardization of the debriefing session with trained facilitators can be helpful in maximizing the debriefing session.

Improvements in Medication History Outcomes with Student Pharmacists on an Innovatively Designed Longitudinal Clerkship. Aubrie Rafferty, University of North Carolina at Chapel Hill, Elizabeth Michaelets, UNC Eshelman School of Pharmacy and Mission Health System. Objectives: Pharmacy departments have embraced key performance indicators (KPI) that include achievement of clinical outcomes, increased patient contact, and reduced harm. Student pharmacists can assist in meeting KPIs while meeting school of pharmacy goals of increasing direct patient interactions. Method: This prospective, observational, descriptive study is part of a larger transitions of care initiative within the institution. Fourth year student pharmacists were offered an elective, longitudinal, evening rotation during which they see patients admitted to the hospital within the last 24 hours. Each student interviews patients, pharmacies and physicians to obtain a comprehensive medication history from 5-9pm one evening per week. The students update the medical record and work with a pharmacist preceptor to review the admission medication reconciliation and resolve discrepancies. Results: During one semester, student pharmacists interviewed 952 patients, spending an average of 26.7 minutes of direct contact per patient. 8,979 medications were reviewed. During the medication history process, 3,591 medication-related problems were identified and resolved, of which 25.2% involved a high risk medication. The most common discrepancy was omission of a medication (48.2%). During the medication reconciliation review, students identified and pursued resolution of 914 additional medication-related problems, 30.6% of which involved a high risk medication. The most common discrepancy was omission of a home medication (81.8%). Implications: The success of a student driven pharmacy medication history service enabled our institution to reduce harm and increase direct patient contact for student pharmacists. This new clerkship will begin its second year in May 2015.

Improving Clinical Knowledge and Promoting Advocacy of Women’s Health in a Third Year Pharmacy Elective. Nicole E. Eckard, D’Youville College, Stacie J. Lampkin, D’Youville College. Objectives: This study had two Objectives: (1) to assess students’ perceptions about how well a Women’s Health (WH) elective increased knowledge of WH topics and resources, enhanced pharmacy related skills, and promoted patient and self-advocacy; (2) to increase student exposure to WH related learning and performance measures as put forth by AACP’s WH Curriculum and to provide students with additional opportunities to achieve CAPE educational outcomes. Method: An anonymous survey was administered to the 25 students who took a WH elective over the course of two consecutive years. Using a 4-point Likert scale, survey questions assessed if the various class sessions and active learning assignments enhanced knowledge, awareness of resources, skills, and advocacy surrounding WH topics. Results: There was a 100% response rate. 91.5% of students agreed (“agree” or “strongly agree”) that all covered topics improved their WH knowledge. The percentage of students that agreed the course increased their awareness of resources was 98.1%. Students agreed 95.9% of the time that the active learning activities improved their skills, such as public speaking and time management. 97.6% agreed the course improved their ability to effectively advocate for patients and themselves. Implications: Based on these results, the majority of students reported that the course increased their knowledge, resource awareness, skills and ability to advocate on WH related issues. In addition, this elective expanded upon the WH core course topics and offered students exposure to additional WH related learning and performance measures that align with AACP’s WH Curriculum and provided students with opportunities to achieve CAPE outcomes.

Incorporating Creativity Into a Culture of Safety Project: Student Performance and Perception. Kierstan M. Hanson, Manchester University, Robert D. Beckett, Manchester University. Objectives: To assess pharmacy student performance in and perceptions of an open-ended, creative project intended to assess students’ understanding of and commitment to culture of safety. Method: Second year pharmacy students (n=72) learned about culture of safety through lecture, active participation, panel discussion and videos. Students were tasked with making a creative product to convince a hypothetical pharmacy or hospital administrator to adopt a culture of safety. Students completed an electronic survey to assess perceptions of the project. Questions were phrased as 3 and 4-point Likert scales. Results: Sixty-seven students completed the survey (response rate 93%). The percentage of students who strongly agreed they were committed to protecting patient safety increased from 48% to 76% of respondents (p<0.05). Approximately 92% strongly agreed or agreed they enjoyed the creative portion of the
project. Over 87% of respondents strongly agreed or agreed their ability to convince someone of an alternate viewpoint was enhanced through this project. Students generally rated their ability to persuade key stakeholders (60%) and to identify advantages of a culture of safety (80%) as good. **Implications:** The results of this study indicate the project was effective at improving student commitment to patient safety. Additionally, pharmacy students enjoyed the creative aspect of this project. The continuation and revision of this project will benefit future students by enhancing their commitment to patient safety, encouraging creativity and helping students persuasively discuss culture of safety.

**Increasing Awareness of Veteran Care Among Healthcare Professional Students: An Interprofessional Collaboration at MCPHS University.** Sheila Seed, MCPHS University–Worcester/Manchester, Tammy Gravel, MCPHS University School of Nursing, Karen S. Lamson, MCPHS University Library and Learning Resources, Amanda Morrill, MCPHS University–Worcester/Manchester. **Objectives:** The purpose of this study was to develop an annual Veterans’ conference targeting contemporary healthcare needs of Veterans with the goal of enhancing the knowledge of the health professional students across our campuses. **Method:** An interprofessional collaboration of nursing, physical therapy, physician assistant and pharmacy faculty was formed to establish a Veteran’s Care Collaboration seminar. The conference involved panelists, consisting of veterans or those who care for veterans, discussing a variety of topics: access to care, appropriate assessments, mental health issues, traumatic brain injury treatment and care of women veterans followed by a case discussion. The case discussion was facilitated by faculty and completed by an interprofessional team of students after the panel presentation. Attendees completed a survey tool and reflection following the conference. This study was approved by the Institutional Review Board. **Results:** There have been two conferences with a total of 106 students in attendance (primarily nursing and pharmacy students). State legislators, advanced practice nurses, veterans of war, students and faculty have all participated in panel discussions. Survey tool responses resulted in, 83.7% strongly agreed that the activity provided them a better understanding of Veterans’ healthcare concerns and 81.6% strongly agreed it would change how they provided care to an identified veteran. **Implications:** These conferences have improved student’s insight into the unique care needs of our Veteran population. Many of these health professional students will make positive inroads in caring for our Veterans as they continue on in their clinical experience as a student and as an independent clinician.

**Innovative Pharmaceutical Industry Elective: Design & Outcomes.** Janelle Mikulca, Northeastern University/Cubist Pharmaceuticals, Jennifer Backo, Northeastern University/Cubist Pharmaceuticals, J. Andrew Skirvin, Northeastern University. **Objectives:** 1. Develop an innovative pharmaceutical industry course for PharmD students. 2. Identify knowledge gaps of opportunities for pharmacists in industry, and fill those gaps through lectures and hands-on assignments. 3. Engage students in a longitudinal project to develop skills valued by the pharmaceutical industry. **Method:** The course was planned by a faculty mentor and pharmaceutical industry post-doctoral fellows with experience in the areas of medical affairs, clinical research, HEOR, etc. The design centered on a longitudinal project, in which students progressively launched a mock drug. Students were randomly assigned to groups that received formative assessment and feedback on mock drug assignments. These assignments concentrated on different phases of drug development, with specific focus on areas most applicable to pharmacists in industry. Students also attended weekly lectures held by industry content experts. Summative assessments included quizzes, and pre- and post-course surveys. To complete the longitudinal project, each group combined their semester long assignments into a final drug launch presentation. **Results:** Students demonstrated enhanced knowledge of pharmaceutical industry functions and career options through the post-elective survey. Summative assessment feedback occurred through post-assignment discussions and quiz results. Students validated their understanding of the steps to launching a drug (i.e. research, medical affairs, regulatory, HEOR) via their final project presentation. **Implications:** This course model employed active learning strategies, longitudinal group work, and student accountability. With the decline in available retail and clinical pharmacist jobs, this model can be reproduced to educate, engage, and inspire other PharmD students to pursue and recognize non-traditional pharmacy career pathways.

**Integrating Business Planning Concepts in a Doctor of Pharmacy Curriculum.** Natalie A. DiPietro Mager, Ohio Northern University; Marcia M. Worley, Ohio Northern University, Joshua S. Ilenin, OhioHealth Riverside, Jenelle L. Sobotka, Ohio Northern University. **Objectives:** The 2016 Accreditation Council for Pharmacy Education Standards emphasizes pharmacy management, innovation, and entrepreneurship. Two new business plan projects were created to provide opportunities for Doctor of Pharmacy students to apply these concepts. The poster objective is to describe the implementation of these projects in the didactic curriculum and subsequent feedback. **Method:** Pharmacy faculty at a 0-6 program designed and implemented business plan projects for junior-level/P3 and senior-level/P5 courses. P3 students worked in groups to create business plan reports detailing self-care services which were assessed by faculty using a rubric. P5 students worked in groups to create a business plan for a new pharmacy service in one of four practice sites (ambulatory care, community, institutional, or worksite wellness program) based on a standardized case. Students presented their results in a poster session where they were assessed by faculty and off-campus experts using a rubric. Student feedback was obtained using course evaluations, reflective papers (P3 students), and Qualtrics survey (P5 students). Assessment of this project was approved by the University IRB. **Results:** Students in both courses indicated the project was an impactful learning experience. Faculty and off-campus experts stated the project was a valuable experience that students could apply to practice. **Implications:** The pharmacy profession is evolving as new patient care services and financing models emerge; therefore, students need a strong foundation in pharmacy management, innovation, and entrepreneurship. Sharing experiences from these activities will aid faculty at other institutions wanting to include business planning projects throughout their curriculum.

**Integration of Basic and Clinical Science Courses in US PharmD Programs.** Mohammed A. Islam, West Coast University, Rahmat M. Talukder, The University of Texas at Tyler, Reza Taheri, West Coast University, Nicholas A. Blanchard, West Coast University. **Objectives:** Curricular integration is re-emerging as a pivotal strategy in today’s healthcare education. Research suggests that integration motivates and engages learners as well as helping them connect and apply learning. The objective of this study is to determine the current status of basic and clinical science integration in US pharmacy programs. **Method:** A survey instrument was developed and distributed through SurveyMonkey to curriculum SIG members of 132 ACPE-accredited and candidate-status PharmD programs. Survey items focused on soliciting qualitative and quantitative information on the design, implementation, outcomes and challenges of integrated courses. Descriptive statistics was used for data analysis. **Results:** With 112 programs responding, the survey response rate was at 85%. Out of 112 schools/Colleges, 78 (70%) offer basic and clinical science courses in an integrated fashion. The forms
of integration include: full integration with merging disciplinary contents (n=25); sequential and coordinated delivery of disciplinary contents (n=50); and stand-alone courses with integrated lab (n=3). Sixty percent of the respondents agreed/strongly agreed that planning/design of integrated courses involved collaboration between the disciplines. Course materials/assessment tools were developed collaboratively in 44% of integrated programs. Respondents identified faculty time/workload and inadequate coordination between disciplines, as potential barriers to implementation of integrated courses. Implications: The results suggest wide variations in the design and implementation of integrated courses among US schools/colleges of pharmacy. Even in integrated courses there is opportunity for more collaboration. Faculty training and buy-in plays a significant role in successful implementation of curricular integration.

Intercultural Variations in Tobacco Cessation: Assessing the Characteristics of a Bhutanese Refugee Population. Robert Willborn, Brody Maack, North Dakota State University. Objectives: Tobacco use of Bhutanese refugees in their country of origin, Nepal, has been described, however no research exists on tobacco cessation among Bhutanese refugees in the US. The purpose was to assess differences in tobacco use, exposure and cessation between the Bhutanese refugee and white populations within a pharmacist and dietitian-led tobacco cessation program in a Federally Qualified Health Center to identify trends that may help clinicians provide care for this vulnerable population. Method: A self-controlled case series study reviewing retrospective data from patients with multiple appointments for tobacco cessation consultation was performed. Data collected and analyzed included demographics, tobacco use history, exposure, type of tobacco used, and cessation outcomes. Data was analyzed using odds ratios with standard error estimates and the Man-Whitney U-test for median equality. Results: Bhutanese refugees exhibited higher use of smokeless tobacco (SLT) products than the white population, and more household tobacco users. The white population showed a higher propensity to smoke, have exposure to passive smoke, and attempt to quit previously. Among Bhutanese refugees, significantly more females used SLT, whereas more men were smokers. Bhutanese refugees demonstrated significantly higher likelihood of tobacco cessation at all interval lengths, while showing no difference in number of follow up visits, and less utilization of pharmacotherapy. Implications: The Bhutanese population in the US appears more likely to quit using tobacco, while using the same amount of services, with less pharmacologic treatment. These findings may provide insight to professionals identifying and treating Bhutanese refugees for tobacco cessation.

Interprofessional Encounter between Pharmacy and Physical Therapy. Students, Courtney S. Davis, The University of Mississippi, Kim G. Adcock, The University of Mississippi, Joel Pittman, The University of Mississippi. Objectives: To augment one of the progressive disclosure cases, which is a part of the problem-based learning course, physical therapy students and pharmacy students completed an interprofessional activity in order to facilitate cross-discipline learning around Parkinson’s disease. Students’ knowledge related to both disciplines was assessed before and after the activity. Method: Prior to the interprofessional activity, physical therapy and pharmacy students were given a 10 question standardized knowledge assessment consisting of durable medical equipment and drug therapy questions. Students were placed in groups and required to work through a patient case and develop a plan of treatment. Each group was also required to attend the physical therapy lab and review proper usage of durable medical equipment. At the end of the activity, students were asked to complete the same knowledge assessment. Change in scores before and after was assessed using an un-paired t-test. Results: A total of 150 students participated in the pre-assessment and 147 students completed the post-assessment. The average score on the pre-assessment was 52% while the average score on the post-assessment was 68% (p = 0.12). Although the overall differences were not statistically significant, there was an increase in the percentage of correct answers for all questions. When evaluating each discipline, the overall scores increased, but were not statistically significant (physical therapy, p = 0.22; pharmacy, p = 0.18). Implications: The trend of increased knowledge after participation in an interprofessional activity highlights the need to increase interactions with other health-related professions in order to improve the knowledge of other disciplines.

Interprofessional Pilot Project: PharmD–DNP Students’ Ambulatory Care Telephone Simulation. Debra K. Farver, South Dakota State University, Jane R. Mort, South Dakota State University, Robin Arends, South Dakota State University College of Nursing, Alex W. Middendorf, South Dakota State University, Jeremy Daniel, South Dakota State University. Objectives: To pilot an interprofessional, ambulatory patient case telephone simulation to assess problem solving, communication, and utility of the activity. Method: Volunteer third year pharmacy (PharmD) students reviewed an ambulatory patient’s case and then called an “on-call” Doctor of Nursing Practice (DNP) final year student to discuss treatment options. Pharmacy faculty observed the interchange. Subsequently, the DNP student called the simulated patient, played by a DNP faculty who also assessed treatment choice and communication with the patient. Problem solving, communication performance, and perception of colleague were evaluated via rubrics and a survey. Results: Fifteen pharmacy students each reviewed one of six unique ambulatory patient cases. Sixty percent (9 of 15) of the pharmacy students identified and solved the therapeutic problem. The students had difficulty solving six cases (i.e., dosing with renal insufficiency, route of administration, drug induced laboratory changes). All pharmacy students met expectations in six of the 11 communication areas with five students having difficulty with specific aspects of the recommendation and summarizing recommendations and six students having trouble with identifying alternatives. All students agreed or strongly agreed that the simulation added to their learning about the team approach to care, enhanced their understanding about patient care, positively affected their attitude towards patient-centered care and learned skills that they plan to apply in the future. Implications: The PharmD and DNP telephone simulation identified issues in problem solving and communicating. All students viewed it as realistic and challenging activity.

Interprofessional Simulations as Part of a Critical Care Pharmacy Elective. Kendrea M. Jones, University of Arkansas for Medical Sciences, Ashley S. Wilson, University of Arkansas for Medical Sciences, Catherine E. Renna, Drayton A. Hammond, University of Arkansas for Medical Sciences. Objectives: To describe the use of interprofessional simulations in a pharmacy elective. Method: Pharmacy students enrolled in a critical care elective participated in mechanical ventilation (MV), advanced cardiac life support (ACLS), and end-of-life (EOL) care interprofessional, high-fidelity simulations with medical, nursing, and respiratory care students. In the MV and ACLS simulations, each group had at least 1 student from each discipline. Following both simulations, teams participated in debriefing. In the EOL simulation, 2 pharmacy, 1 medical, and 2 respiratory care students participated. Each scenario in the two-part EOL simulation was followed by a debriefing session with student participants, non-participants, and faculty. Three intensive care unit (ICU) pharmacists, a clinical ethicist, and an ICU nurse led the debriefings. Learners completed a post-simulation
Interprofessional Team-Based Learning in a Primary Care Teaching Clinic. Brigitte L. Sicat, Virginia Commonwealth University, Dave L. Dixon, Virginia Commonwealth University, Karen E. Stewart, Virginia Commonwealth University Health Systems Clinical Health Psychology, Susan Wolver, Virginia Commonwealth University School of Medicine, Steven Bishop, Virginia Commonwealth University School of Medicine, Bennett Lee, Virginia Commonwealth University School of Medicine, Allison Phillips, Virginia Commonwealth University School of Medicine, Bruce Rybarczyk, Virginia Commonwealth University Psychology Department. Objectives: Interprofessional education (IPE) is increasingly being integrated into health care provider training programs. Growing out of an interprofessional outpatient teaching clinic where pharmacists, psychologists and physicians manage shared patients, our institution developed a series of IPE team-based learning (TBL) modules with learning teams of medical and pharmacy residents, and psychology graduate students. We describe the development and evaluation of an obesity module.

Method: The 2-hour module (learning objectives, readiness assessment tests, and integrated cases) was developed collaboratively by the faculty to require input from each discipline to develop optimal care plans. Learners were placed in teams of 5-7 members with representation from each profession, while interprofessional faculty served as facilitators. After completing the session, learners assessed, on a 4-point scale (1 = strongly disagree, 7 = strongly agree). Questions from end-of-semester course evaluations used a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree) to assess course delivery methods. Data were analyzed using descriptive statistics. Results: Twenty-eight interprofessional student learners participated in the MV simulation, 22 in the ACLS simulation, and 15 in the EOL simulation. Overall, students agreed that the simulations would help them in clinical practice (mean 6.67 + 0.11) and that simulation was an engaging and safe learning environment (mean 6.75 + 0.01). Course evaluations reflected that pharmacy students felt that the simulations were both the most enjoyable and most beneficial parts of the course. Implications: Incorporating interprofessional simulations into a critical care elective was well-received by pharmacy students. Increasing the number of simulations should be considered.

MTM Hybrid Course Improves Student Self-Efficacy in Performing Medication Therapy Management Services. Tiffany B. Threatt, Presbyterian College, Sarah H. Wagner, Presbyterian College. Objectives: To determine if an integrated approach between a Medication Therapy Management elective course and an Introductory Pharmacy Practice Experience (IPPE) would improve a student’s self-efficacy in performing MTM services (MTMS). Method: An elective course was structured so that students were initially trained through the APhA certificate program Delivering Medication Therapy Management Services. These students were then enrolled in an MTMS focused, 6-week IPPE under the supervision of a preceptor who had also completed the same certificate training program. A self-efficacy survey adapted by Dahl and Hall (University of Pennsylvania) was used to report on 1 class as they progressed through the curriculum and compare performance levels across 6 Objective Structured Clinical Exams (OSCEs) in a skills laboratory. Results: Students reported spending 11.0 hours on average preparing for OSCEs each semester. As one class progressed through the curriculum (survey response rate 93-99%) their perceived performance trended down (perception of good or excellent performance: PY1 94% fall, 82% spring; PY2 84% fall, 88% spring; PY3 65% fall). After the first year, fewer students reported nervousness adversely affecting their performance “a great deal” (PY1 28% fall, 41% spring; PY2 34% fall, 15% spring; PY3 22% fall). Over 3 years, similar results were found with comparator classes completing the same OSCEs. Implications: Student reported anxiety contributing to poor OSCE performance seems to improve as students become more comfortable with the exam format; however, perceived performance declines as students complete more challenging OSCE stations. Incorporation of additional strategies to help reduce student anxiety may help with OSCE performance in the future.
Student completed an opinion survey to provide feedback on their experience. Statistics included ANOVA and Chi square analysis. **Results:** A total of 66 videos were uploaded. There was no significant difference in the mean self-assessment (97%) vs peer assessment (97.2%) scores. Nineteen (28.7%) of students assessed themselves lower than their peer assessment, 20 (30.3%) assessed themselves higher and 27 (40.9%) had no difference in scores. 80% of students agreed or strongly agreed that video recording aided in mastery of patient assessment, 70% indicated it assisted in preparation for the practicum and 60% would recommend the use of video recording in labs. **Implications:** This is a second part of a series of techniques being assessed for providing authentic patient simulation opportunities outside of lab time and moving toward a mixed lab model. Both on-line virtual patients and peer assessment of patient simulation have been received well and serve as alternate methodologies in patient assessment labs.

**Mentor Perception of Value of a Fourth Year Research Project for Doctor of Pharmacy Students.** Melany P. Puglisi-Weening, Chicago State University, Charisse L. Johnson, Chicago State University, Joseph Slonek, Chicago State University, Rosalyn P. Vellurattil, University of Illinois at Chicago, Michael Wilcox, Chicago State University, Kumar Mukherjee, Chicago State University, Elmer J. Gentry, Chicago State University. **Objectives:** This College of pharmacy introduced the capstone project in the 2011-2012 academic year as a requirement of the doctor of pharmacy degree. Students were matched with mentors to develop a research project, collect data and present the results in a poster and manuscript at the end of their fourth professional year. The objectives of this study were to assess faculty perceptions of 1) the value of research in the students’ success in a pharmacy degree program; 2) the students’ level of preparedness to complete the project requirements; and 3) the students’ ability to complete research projects in their future career. **Method:** An anonymous 35-item survey instrument was administered to all capstone mentors. It elicited the mentors’ perceptions regarding the capstone program and research as it relates to a doctor of pharmacy degree. Data were analyzed by descriptive statistical methods using PASW Version 18.0. **Results:** The response rate of the survey was 83% (n = 19). The majority of mentors agreed that it was important for students to participate (n = 15) and demonstrate excellence (n = 11) in research activities and that the capstone project should remain a graduation requirement (n = 13). Most respondents (n = 12) indicated that students were not adequately prepared for the capstone project by the didactic curriculum. Mentors felt that students are better prepared to conduct clinical as opposed to basic science research in the future. **Implications:** Mentors agree that student participation in research is important, however additional preparation may be necessary to conduct research independently in the future.

**Net Cumulative Income Break-Even Analysis of Pharmacy Graduates Compared to High School and College Graduates.** Marie A. Chisholm-Burns, The University of Tennessee, Justin Gatwood, The University of Tennessee, Christina A. Spivey, The University of Tennessee, Susan Dickey, The University of Tennessee. **Objectives:** Prior studies have not explored the financial break-even point of a pharmacy career compared to high school graduates and bachelor’s degree holders who enter the job market considerably earlier. The study’s purpose was to determine the net income break-even point between pharmacists and those who enter the workforce directly after high school or college graduation. **Method:** Markov modeling and break-even analysis were conducted. Estimated costs of education were utilized in calculating net early career earnings (ages 18 to 36) of high school graduates, Bachelor’s of Science in chemistry or biology degree holders, and pharmacists with and without residency training. **Results:** Over the
first 10 years of a pharmacist’s career, they accumulate net earnings of $852,744 to $1,191,612, depending on education costs and career path. Pharmacists can expect to earn at least 1.83 times the amount that high school graduates will accumulate by age 36 and 1.28 to 1.70 times the amount undergraduate degree holders will accumulate by age 36. In comparison to high school graduates, the break-even point for pharmacy career paths varied from age 29 to 32, depending on length of pre-pharmacy education and type of school attended (public or private). When examining pharmacy career paths versus bachelor’s degree holders, the break-even point varied from age 27 to 34. **Implications:** Regardless of the chosen pharmacy career track and the typical cost of obtaining a PharmD degree, pharmacy education has a positive financial return on investment, with a break-even point of less than 10 years upon career entry.

**Net Cumulative Income of Pharmacy Faculty Compared to Community and Hospital Pharmacists.** Marie A. Chisholm-Burns, *The University of Tennessee*, Justin Gatwood, *The University of Tennessee*, Christina A. Spivey, *The University of Tennessee*. **Objectives:** To compare the net cumulative income of full-time pharmacy faculty members (PGY2 residency-trained or with a Ph.D. after obtaining PharmD) versus community pharmacists and hospital pharmacists with or without residency training. **Method:** Markov modeling was conducted from age 18 to 67. Estimated costs of education including cost of obtaining degree (private or public school and program type [3 + 4 or 4 + 4]) and student loans were considered in calculating net career earnings of career paths. **Results:** Ph.D. faculty net cumulative income was at least $5.3 million, which varied according to discipline. The choice to enter a pharmacy practice academic career following a PGY2 residency resulted in net cumulative income of at least $5.9 million and an additional $30,000 (at minimum) of net earnings compared to a PGY2-trained hospital pharmacist. PGY2-trained faculty net career earnings were at least $34,000 higher compared to hospital pharmacists without a residency and approximately $20,000 lower than PGY1-trained hospital pharmacists. Community pharmacists had higher net cumulative income compared to PGY2-trained faculty. Results varied by years of pre-pharmacy education (3 versus 4) and type of pharmacy school attended (public versus private). **Implications:** Faculty net cumulative incomes generally lag behind community pharmacists, likely due to delayed entry into job market as a result of advanced training/education required to be a faculty member. Additional ways to compensate faculty may help with increasing faculty pipelines and recruitment/retention.

**Patient Assessment Items Currently Taught in Pharmacy Curricula.** Rashi C. Waghel, *Wingate University*, Jennifer A. Wilson, *Wingate University*, Danny Salem, *Wingate University*. **Objectives:** To describe patient assessment items currently taught in pharmacy school curricula across the United States. **Method:** An online questionnaire was distributed to pharmacy practice department chairs (n = 166), identified through the American Association of Colleges of Pharmacy (AACP) and school web pages. Eighty patient assessment items were compiled from a course text book and faculty experience. Participants indicated which items were taught in didactic portions of the curricula. Descriptive statistics were utilized for background demographics and performance of each item. **Results:** Of 51 responses received (31% response rate), 33 were used in data analysis; incomplete questionnaires and duplicate school responses were excluded. Fifty-two percent of respondents were from public institutions. Most (97%) reported pharmacist involvement in patient assessment education; physicians, physician assistants, nurse practitioners, and others were also involved. Respondents stated anywhere from 5 to 78 of the skills were taught at their institution, with manual blood pressure and heart rate measurement performed at every institution. In addition, at least 75% of schools stated the following items were taught: breath sounds auscultation, heart sounds auscultation, monofilament testing, pain assessment, palpatory pressure measurement, peak flow meter use, peripheral edema inspection or palpation, point-of-care testing, respiratory rate measurement, and temperature measurement. **Implications:** While a variety of patient assessment items exist, there is some consistency with regards to what items are taught in pharmacy curricula. These study results identified areas of consistency, and may help establish best practices for patient assessment items within pharmacy curricula.

**Performance of a High-Stakes OSCE at a Canadian Pharmacy School.** Eric F. Schneider, *University of Waterloo*, Cynthia Richard, *University of Waterloo*, Elaine Lillie, *University of Waterloo*. **Objectives:** Students at the University of Waterloo School of Pharmacy must successfully complete a fourth-year Objective Structured Clinical Exam (OSCE) as a milestone for graduation. This study was designed to examine the exam’s validity using psychometric valuation, and to identify skill types where students underperformed. **Method:** Data from the December 2014 fourth-year OSCE consisting of seven stations were evaluated for this study. The Modified Angoff method was used to set the exam’s passing score. The overall exam reliability was assessed by calculating Cronbach’s alpha. Performance of individual checklist items was assessed with standard psychometric tests. In addition, average performance in individual skill categories was used to identify areas where students struggled. **Results:** The overall exam performance is as follows: average score 69.7% (range 49.2-86.6%) and Chronbach α 0.67. Seven students failed to meet the threshold passing score. Difficulty of checklist items as measured by percent who correctly accomplished the skill ranged from 2.6-100%. Discrimination of skill items as measured by point biserial (pbi) was -0.10-0.43, with 50.6% achieving a pbi ≥ 0.15. Pbi on communication items ranged from 0.02-0.41, with 21.9% achieving a pbi ≥ 0.15. Evaluation of performance by skill type revealed areas where students consistently performed poorly (e.g., non-drug related patient education and monitoring/follow-up). **Implications:** Our analysis revealed that the majority of OSCE checklist items discriminated among candidates, supporting the validity of the OSCE exam as a high-stakes milestone. Identification of skill types where students underperformed will inform curricular activities designed to strengthen these skills.

**Pharmaco therapy Education in US Colleges and Schools of Pharmacy.** Nicole Paolini-Albanese, *University at Buffalo, The State University of New York*, Ashley Woodruff, *University at Buffalo, The State University of New York*, William A. Prescott, *University at Buffalo, The State University of New York*. **Objectives:** To determine the extent pharmacotherapy is taught, and to characterize what is being taught and how. **Method:** A 52 question, electronic survey was pilot-tested and distributed via SurveyMonkey™ to curriculum representatives at all accredited and candidate status U.S. PharmD programs. The survey instrument included multiple-choice and short-answer questions pertaining to: demographics; credit hours assigned to Pharmaco therapy; Pharmaco therapies placement in the curriculum; specific topics taught and time allotted to each content area; and, pedagogical methods used at the respondent’s Program. Frequency and descriptive statistics were used to characterize survey responses. **Results:** Representatives from 73/129 PharmD programs responded to the survey (response rate 57%). An average of 25.24 +/- 12.03 credit hours are devoted to required pharmacotherapy courses, with the majority (72%) introducing coursework in the second professional year. At least 80% of programs covered one-half or more of the topics within the following content areas: cardiovascular/vascular; infectious diseases;
endocrine; respiratory; gastroenterology; nutrition; nephrology/fluids/electrolytes; neurology; psychiatry; geriatrics; musculoskeletal/pain/connective tissue disorders; men’s health; women’s health; immunology; hematology/oncology and dermatology. In contrast, pediatrics; critical care; preventative/public health; and, pregnancy and lactation represent content areas where less than 50% of topics are taught by at least 80% of programs. Lecture was the most common form of instruction (72%). Implications: Most content areas were adequately covered; however, variability exists in the topics taught within these content areas. The results provide current data describing pharmacotherapy coursework across US PharmD programs and will serve as a reference for curricular development and revision in the future.

Pharmacy Curriculum Outcomes Assessment (PCOA) Performance in Relation to Individual Course Level Performance. David W. Stewart, East Tennessee State University, Peter C. Panus, East Tennessee State University. Objectives: Determine whether pharmacy curriculum outcomes assessment (PCOA) data relate to student performance at the course level. Method: PCOA scores were extracted and compared to course level examination performance. Additional covariates analyzed included undergraduate grade point average (GPA) and total pharmacy college admissions test (PCAT) score. Total PCOA score, Clinical Sciences PCOA score, and Pathophysiology PCOA score were analyzed along with undergraduate GPA and total PCAT scores using Pearson correlation. Results: Exam scores for the pathophysiology course correlated with the total PCOA score, the Clinical Sciences section PCOA score, and the Pathophysiology subsection of Clinical Sciences PCOA score (all comparisons \( p < 0.001 \)). Total PCOA score also showed an association between the above variables and undergraduate GPA (\( p = 0.001 \)) and PCAT performance (\( p < 0.001 \)). Likewise Clinical Sciences PCOA score showed significant correlation to GPA (\( p = 0.033 \)) and PCAT performance (\( p < 0.001 \)). Implications: Students with higher baseline intelligence and/or who have proven to be more effective standardized exam takers, performed better on the PCOA. Usefulness of PCOA to measure programmatic outcomes is supported by these data as a significant correlation was demonstrated between PCOA performance overall, within the section, and within the subsection for a specific college of pharmacy course. Students who performed well in class, likewise performed well on the PCOA, hence this supports the usefulness of the PCOA to evaluate both programmatic level data as well as national level cohort data, so long as programmatic courses encompass the standardized national outcomes as defined by CAPE, ACPE, and PCOA.

Pharmacy Residents’ Perceptions of the Importance of Mentor-Mentee Relationships. Darin C. Ramsey, Butler University. Amy H. Sheehan, Purdue University, Tracy Sprunger, Butler University, Jasmine D. Gonvaldo, Purdue University. Objectives: The purpose of this project is to collect data regarding teaching certificate program participant’s perceptions of mentor-mentee relationships. Method: A 15-item survey instrument was administered to all 2014-2015 participants of the Indiana Pharmacy Teaching Certificate (IPTeC) program. The survey instrument was comprised of questions aimed to capture demographic information and program participants’ perceptions of mentor-mentee relationships. Participants were asked about the importance of having a mentor and to rate perceived importance of specific characteristics of a professional mentor using a 5-point Likert scale ranging from very important (1) to not important (5). Results: One hundred percent of IPTeC program participants (83/83) responded to the survey. The majority of participants indicated that having a professional mentor was either very important (52%) or important (47%) to their professional development, and preferred to choose their own professional mentor (53%). Mentor characteristics rated as high importance by mentees included having similar clinical practice interests (82%), having similar research interests (66%), and being available to meet face-to-face (90%). The age, race, and gender of the professional mentor were not rated as being important to mentees. Implications: Although much research has been conducted about the implementation of mentoring programs in a variety of health professions, there is limited information assessing the mentee’s perspective. This is the first study to assess pharmacy teaching certificate program participants’ perceptions of the importance of mentor-mentee relationships. The results of our study provide novel insight for teaching certificate program directors in ensuring productive and meaningful mentor-mentee relationships.

Pharmacy Student Perspectives of Dual-Elective Simulation with Peer Teaching Component. Gwendolyn Wantuch, University of South Florida, Kamila A. Dell, University of South Florida, Luisa Alvarado, Mark D. LaBbossiere, The Princeton Review, Phuong Le, Nikki Partney, John Phillips. Objectives: Determine student perspectives on peer teaching in a high-fidelity simulation to enhance concept mastery and assessment of patients. Method: Fourth year pharmacy students (PY4s) were integrated into a dual-elective (critical care and nutrition support) high-fidelity simulation as facilitators to promote peer teaching as part of their APPE rotation. Facilitators were responsible for working with faculty professors to develop question and answer keys prior to the simulation. During the simulation, facilitators served as resources for PY3s, answering questions, providing clinical information, and assisting in the learning process with faculty oversight. After the simulation, a survey was completed by PY3 students to gauge the impact of the peer teaching learning experience and provide PY4 students with facilitation feedback. Results: Results of the initial survey showed a consensus that the simulation was useful, organized, and that peer teaching was helpful (mean of 3.79, 3.74, and 3.68 respectively using a Likert scale from 1 to 4, 4 being strongly agree.) All PY4s agreed this activity elevated their confidence in utilizing knowledge from didactic classes and rotations into clinical practice. Implications: Integration of PY4 students into a high-fidelity simulation replicating a clinical environment was mutually beneficial to PY4 and PY3 students. This experience is highly recommended by PY4 students as it reinforced didactic material, enhanced communication skills as well as exposed them to teaching in a clinical environment.

Pharmacy Student Self-Testing to Improve Knowledge Acquisition and Retention in a Pharmacotherapy Course. Anne Graff LaDisa, Concordia University Wisconsin, Ann Biesboer, Concordia University Wisconsin. Objectives: Educational research has shown self-testing increases the ability for students to retain information. The objective of this research was to determine if student self-testing improves knowledge acquisition and retention in a pharmacotherapy course. Method: Students individually wrote weekly, cumulative practice tests of targeted material only during Unit 1 of the course. Working in groups, students exchanged, completed, and discussed solutions to practice tests. Credit was given to students for completing the practice test activity weekly. Students completed 3 unit exams and a final exam during the course. After Unit 1 and final exams, students completed surveys on perceptions of self-testing. Exam scores were compared to the previous year and within the concurrent year. Results: Average Unit 1 exam scores for 2013 and 2014 were 71.7% and 75.8%, respectively (\( p = 0.003 \)). Average scores for Unit 1 material on the final exam for 2013 and 2014 were 64.8% and 69.3%, respectively (\( p = 0.035 \)). Most students reported they created (97%), exchanged and completed (85%) practice tests at least 2 of the 4 weeks during Unit
1. Less than half (41%) discussed solutions to the practice tests with their group. More students (44%) perceived practice testing helpful for unit exam preparation than did not (32%). Fewer students (23%) felt practice testing improved knowledge retention for final examination than did not (39%). **Implications:** Teaching pharmacy students to incorporate the most impactful study practices, such as self-testing, may improve academic performance and knowledge retention, and produce better practitioners and life-long learners.

**Pharmacy Students’ Performance and Perception of Physical Assessment Skills as the Result of Receiving Instruction.** James Lokken, Concordia University Wisconsin, Kassandra M. Bartelme, Concordia University Wisconsin, Andrew P. Traynor, Concordia University Wisconsin, Michael C. Brown, Concordia University Wisconsin, Christian B. Albano, Concordia University Wisconsin. **Objectives:** To determine second-year pharmacy students’ evaluated skill and perceived confidence to perform cardiovascular and renal physical assessment skills as the result of participation in a physical assessment lab. **Method:** Second-year pharmacy students enrolled in a patient skills lab completed a survey before and after receiving instruction on cardiovascular and renal physical assessment. Students were shown videos of proper techniques in assessing edema, heart sounds, and pulses. The proper techniques were modeled for the students by the instructors and then students practiced on each other. Students’ techniques were then formally evaluated utilizing a rubric. The lab occurred concurrently with the students’ renal pharmacotherapy module. **Results:** Students performed very well based on the grading criteria, with 85 of the 87 students receiving acceptable ratings. All 87 students enrolled in the course completed the pre- and post-experience survey. Perceived confidence in performing renal and cardiovascular physical assessment increased in 62% of students, remained the same in 32% of students, and decreased in 6% of students following instruction. **Implications:** An approach to teaching physical assessment skills longitudinally, dividing content and aligning with a concurrent pharmacotherapy model resulted in a positive impact on pharmacy students’ perceived level of confidence and rubric-driven performance of those skills. A longitudinal approach and alignment of physical assessment components with corresponding pharmacotherapy modules may be an effective way to organize curricula.

**Phase 2 of Interprofessional High-Fidelity Code Blue Simulation: Effect of Repeated Scenarios and Modified Debriefing Formats.** Philip K. King, Jeffrey Schneiderman, University of Toledo Interprofessional Immersive Simulation Center, Helen G. Salama, The University of Toledo, Michael J. Peeters, The University of Toledo. **Objectives:** To determine if a difference exists in residents’ and students’ perceptions of interprofessional education/collaboration within code blue simulations, with added simulation scenario repetition during each session and shortened debriefing time. **Method:** In this IRB-approved study, internal medicine residents, pharmacy residents, nursing students, and respiratory therapy students participated together within weekly high-fidelity code-blue simulations. An experienced paramedic (ACLS instructor) created and led sessions, while interprofessional faculty helped facilitate. Resident/student team-members participated according to their professions’ roles—though could be asked to do more. In phase 1, one simulation scenario had been run within each session and was followed by an extensive 15-20min debriefing discussion, including watching video of scenario. In phase 2, the scenario and debriefing were shortened (no video), and the scenario was re-run—allowing learners to incorporate feedback they received after the first simulation scenario. For interprofessional education/collaboration perceptions, the Readiness for Interprofessional Learning Survey (RIPLS) was administered to all participants before and after each simulation session. **Results:** In both phases, survey reliability was 0.87 (Cronbach’s alpha). Forty-eight participants in phase 1 (mean change = +3.1, SD = 5.2, p<0.001; effect-size 0.42, Cohen’s d) appeared similar to 34 participants in phase 2 (mean change = +2.6, SD = 5.4, p<0.001; effect-size 0.34, Cohen’s d). While students had a greater mean change in RIPLS perception than residents during phase 1 (0.71 effect-size), residents’ change was greater during phase 2 (0.50 effect-size). **Implications:** Both periods showed a positive change in RIPLS scores among all participants. However, residents and students had different preferences regarding simulation-session format. For beneficial interprofessional learning, different approaches may be necessary with residents and students.

**Portrait of a PROfolio – Professional, Reflective, Overview Portfolios.** Kathryn K. Neill, University of Arkansas for Medical Sciences, Cora L. Housley, University of Arkansas for Medical Sciences, Eric Hamilton, University of Arkansas for Medical Sciences, Brett Bailey, University of Arkansas for Medical Sciences, Ashley N. Castleberry, University of Arkansas for Medical Sciences. **Objectives:** To assess students’ perception of competency development throughout the pharmacy curriculum using longitudinal electronic portfolio self-assessments and reflections. **Method:** Four cohorts of students (n = 468) completed PROfolio reflections via an online platform. Five reflections are distributed throughout the curriculum [P1, P2, P3 Fall, P3 Spring (Pre-APPE), P4 Spring (Post-APPE)]. Reflections include self-evaluation of level of ability (Novice, Practicing, Achieved) for three UAMS competency domains (Patient Care; Dispensing and Resource Management; Health Improvement, Wellness, and Disease Prevention). Students also reflect on level of exposure (Introductory, Observed, Performed) and level of ability (Novice, Practicing, Achieved) for eleven ACPE Pre-APPE competency areas. Averages for competency levels are reported. **Results:** Most students perceived they achieved competence in the three UAMS competency domains by the end of the P4 year [Domain 1 (93.9%), Domain 2 (96.4%), and Domain 3 (98.8%)]. Reflections also indicate a strong progression in ACPE Pre-APPE competencies from P1 Spring to P3 Spring in both student-perceived level of exposure (Performed 36.4% to 78.4%) and ability (Practicing/Achieved 48.8% to 86.4%). Only 0.5% of students selected not applicable by P3 Spring. Reflections provide guidance for mentors to deliver student-specific feedback targeting competency development. **Implications:** PROfolio reflections provide insight into students’ self-perception of competency development for UAMS and ACPE Pre-APPE competencies. Assessments are designed to reflect overall development which incorporates didactic and experiential coursework as well as extracurricular experience. Current data reveal most students perceive they are developing competency to be APPE and practice ready. Reflections are also used to inform continuous curricular quality improvement.

**Preadmission Predictors of On-Time Graduation in a Doctor of Pharmacy Program.** Rondall E. Allen, South University, Carroll Diaz, Kisha O. Gant, Xavier University of Louisiana, Ashley M. Taylor, Xavier University of Louisiana, Ifeanyichukwu O. Onor, Xavier University of Louisiana. **Objectives:** Determine which preadmission variables or combinations of variables are able to predict on-time graduation in a Doctor of Pharmacy Program. **Method:** Transcripts and student files were reviewed for 429 students who completed the program between 2011 and 2013. The prepharmacy variables examined in the study were prior degree, cumulative and math-science grade point average (GPA), the number of unsatisfactory grades (USG) in non-science and math-science courses, total number of USGs, the number of
Preceptor Perceptions of Fourth Year Student Pharmacists’ Abilities Regarding Patient Counseling on Therapeutic Lifestyle Changes. Jennifer A. Wilson, Wingate University, Shawn Taylor, Wingate University, Michelle DeGeeter, Wingate University, Kim I. Leadon, University of North Carolina at Chapel Hill, Philip T. Rodgers, University of North Carolina at Chapel Hill. Objectives: Advanced Pharmacy Practice Experiences (APPEs) provide an opportunity for students to showcase health and wellness knowledge and skills attained during their didactic education. The primary objective of this study was to assess preceptor perceptions of how well pharmacy year four (PY4) students are prepared to provide guideline-based and patient-specific therapeutic lifestyle counseling (TLC) at the onset of APPE rotations. A secondary objective included assessment of differences in counseling abilities if the preceptor considered the student normal weight versus overweight or obese. Method: A questionnaire containing Likert questions about perceptions was distributed electronically to 708 PY4 preceptors from two pharmacy schools in October 2014. Only preceptors who routinely provided TLC were included in data analysis, which was done using descriptive statistics. The project was approved by both schools’ institutional review boards. Results: The survey was completed by 165 PY4 preceptors (response rate = 23.3%), and 67 met inclusion criteria. Regarding nutrition counseling, more preceptors strongly agreed/agreed that students better provided counseling per guidelines (79.1%) versus individual patient needs (62.6%). Preceptors reported they perceived students of normal weight were more likely to adequately counsel overweight/obese patients (73.8%) compared to students that were overweight/obese (41.6%). Students of normal weight were perceived to be more likely to adequately counsel normal weight patients on lifestyle modifications (72.6%) compared to students that were overweight/obese (38.5%). Implications: While students are perceived as adequately equipped to provide guideline-based recommendations, there is room for improvement in providing patient-specific counseling. Additionally, it is perceived that student health status related to weight impacts TLC patient counseling.

Prescription Drug Abuse Awareness: A Service Learning Co-Curricular Program. Kristy L. Brittain, South Carolina College of Pharmacy, Cathy L. Worrall, South Carolina College of Pharmacy. Objectives: Generation Rx is a national initiative aimed at combating prescription drug misuse and abuse through educational prevention. During the fall 2014 semester the South Carolina College of Pharmacy (SCCP) expanded its Generation Rx Program into a required co-curricular service learning project (SLP). All student pharmacists on the SCCP Medical University of South Carolina and Greenville Hospital System campuses participated in this pilot program expansion. Method: Second and third year student pharmacists coordinated and led educational programs at various South Carolina middle and high schools. First year student pharmacists shadowed groups providing the presentations.

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a structured categorization matrix was employed to associate student reflection of the IPE event to the IPEC core competencies. An inductive content analysis of the data was also utilized to identify additional themes that fell outside the structured matrix. Results: Fifty-seven original blog posts and one hundred six blog comments were analyzed. Deductive content analysis identified themes within five specific IPEC core competencies: competency domain 1-value and ethics, VE4; competency domain 2 – roles/responsibilities, RR2 and RR9; competency domain 3 - communication, CC7; competency domain 4 – teams and teamwork, TT8. Additional themes identified through inductive content analysis included: importance of IPE communication, understanding of other professions, professional roles, and teamwork. An inductive content analysis of the data was also utilized to identify additional themes. Implications: Qualitative analysis can be utilized to assess student learning from an IPE event from the student perspective and use those perspectives to map an IPE event to the IPEC core competencies.

Re-Discovering a Classic Assessment Technique: How One-Minute Papers Can Reveal the Breadth of Student Learning. Veronica S. Young, The University of Texas at Austin, Jennifer K. Seltzer, The University of Texas at Austin, Rochelle M. Roberts, The University of Texas at Austin, Joshua Walker, The University of Texas at Austin.

Objectives: Reflective observation is a key element in Kolb’s experiential learning cycle, transforming learners to make connections among important concepts. In health professions programs, reflection is also commonly incorporated in the development of professional identity. The one-minute paper (OMP) is a tool used to prompt students’ recall of content and assess their understanding, which can help instructors identify concepts requiring further clarification. The objective of this process improvement initiative in an evidence-based practice laboratory course is to assess learning outcomes by incorporating guided student reflections at the individual and team level using the OMP. Method: Team activities are modeled after Team-Based Learning and Problem-Based Learning and intentionally structured to promote collaboration and leadership. During the last laboratory session, students completed three OMPs reflecting on key “take-aways” addressing knowledge/skills, teamwork/social learning and practice/application. Results: Qualitative analysis of students’ reflections (n = 99) demonstrated OMP effectiveness in assessing learning outcomes. The majority of responses corresponded with learning outcomes addressing content and skills development. Students identified core components essential to effective teamwork and leadership and described how they applied new skills beyond the classroom. Themes identified align with elements of our university’s learning model: engaging content, continual contextualization, practice/application, social learning, authentic experiences and ongoing assessment. Implications: The OMP can be used successfully to measure foundational knowledge and to assess students’ metacognition and collaboration as emphasized in CAPE 2013. These lifelong skills prepare students for collaborative team-based care.

Recording Mock Patient Interviews: Helping Identify Strengths and Weaknesses in Patient Communication. Krista G. Brooks, Southwestern Oklahoma State University; Morgan D. Greutman, Cheri K. Walker, Southwestern Oklahoma State University; Kristin Montarella, Southwestern Oklahoma State University; Tiffany L. Kessler, Southwestern Oklahoma State University, Erin D. Callen, Southwestern Oklahoma State University.

Objectives: Effective communication is an important aspect of providing patient-centered care, and requires articulation of important information to patients, good listening skills, nonverbal skills, and interviewing techniques to effectively collect information from patients. This study compared students’ self-perception concerning communication skills versus their self-reflection after viewing recorded interviews. Method: Third semester pharmacy students performed mock interviews. Prior to the activity, communication skills were discussed in class. Students recorded interviews with their peers playing the part of a patient. After the interview, baseline data was collected via self-assessment surveys consisting of 10 questions rating their performance using a Likert scale (1-poor to 5-excellent). Each student then viewed their recorded interview and completed the survey again. Results: Twenty-nine out 36 students consented to using their data for the study. Of the 10 items on the survey, data from two questions showed an average increase in scores after viewing the recorded interview, and 8 questions showed an average decrease. Statistically significant decreases (P < 0.05) were noted between mean pre- and post-assessment after viewing for three questions, including identification/response to emotional or nonverbal cues, using active listening skills, and using transitions during the interview. Implications: Providing students opportunities to view their interview skills allow for self-reflection on what is actually occurring during the interview rather than self-perception. When students have the opportunity to view the interaction, they can focus on collected information, as well as nonverbal communication. This activity allowed students to truly reflect on areas where they excel, and provide awareness of areas that need improvement.

Relationship between PCOA Performance and Course Performance in Second Year Pharmacy Students. Justine S. Gortney, Wayne State University, Christopher A. Giuliano, Wayne State University, Richard L. Slaughter, Wayne State University, Francine D. Salinitri, Wayne State University.

Objectives: To determine if a relationship exists between PCOA and coursework performance in P2s in a pharmacy curriculum. Method: The PCOA was administered to all P2 students. Due to PCOA time window, data evaluated was most reflective of P1 coursework. A map of course content was made to PCOA domains and subtopics. Data gathered included P1 and P2 GPA, PCOA performance-overall score and domains, and student course grades for the P1 curriculum. Data was evaluated using descriptive statistics and Spearman correlation scores. Results: Student records of 2 years (N = 157) were evaluated. P1 and P2 GPA had a moderate significant relationship with PCOA score (r = 0.53). The majority of courses mapping to the Basic Biomedical Sciences Domain (3/4) had moderate relationships with PCOA score (r = 0.4-0.53; p<0.01); other course low (r = 0.35; p<0.01). Those mapped to pharmaceutical sciences (3) had low correlations (r = 0.23-0.34; p<0.01). Courses (3) mapped to Social/Behavioral/Administrative (SBAS) or Clinical Sciences that incorporated knowledge-based assessments and focused on law or informatics had low or moderate significant correlation with PCOA scores (r = 0.35-0.5; p<0.01). Courses (4) that had broad, introductory pharmacy content or were skills based had no or low correlation to PCOA scores (r = 0.09-0.26; some p<0.01, others NS). Implications: PCOA exam performance had a significant moderate relationship to GPA and coursework within the basic sciences and some correlation with SBAS or Clinical Sciences focused on informatics incorporating knowledge-based assessments. No relationship was seen with skills-based coursework. Dependent on course content, PCOA scores may provide some reliable assessment data given its relationship to other markers of student performance.

University, Jeremy McAleer, Marshall University, Shekher Mohan, Marshall University, Brittany L. Riley, Marshall University, Robert B. Stanton, Marshall University, Jinsong Hao, Marshall University. **Objectives:** To assess the reliability and validity of third-year (P3) student peer assessments of first-year (P1) student immunization skills competency. **Method:** After completion of a 5-week, modified APHA training course in clinical immunizations, 78 P1 pharmacy students underwent immunization skills competency assessment. Eight P3 students completing their P3 Educational IPPE, and 8 school faculty members, were randomly allocated into 8 student-faculty teams. The teams received training covering skills, conditions, and assessment methodology prior to the evaluation exercise. Each P1 student was assigned to one student-faculty team who evaluated the student’s skill competency during a simulated patient visit. Student-faculty team members independently evaluated student performance using a standard rubric. All simulated patient visits were digitally recorded (video and audio). The recordings were used to establish accuracy of P3 student scoring. Simulated visits were randomly assigned to faculty evaluators who performed the validity checks. P3 student-faculty and student-validity check reliabilities were evaluated using Pearson Correlations and Cohen’s Kappa. **Results:** Means for student, faculty, and validation scores were 30.00 ± 0.24 (93.75%±0.01), 29.95 ± 0.22 (93.59%±0.01), and 30.00 ± 0.26 (93.75%±0.01) respectively. Student performance scores correlated with both the faculty assessments (r = 0.875, p ≤ 0.0005) and the validation assessments (r = 0.501, p ≤ 0.0005). Students and faculty were concordant on 97.44% of evaluations (Kappa = 0.940, p ≤ 0.0005). Students and validation scores were concordant on 73.33% of evaluations (Kappa = 0.400, p = 0.001). **Implications:** Third-year students provided skill assessments consistent with those originating from faculty and having reasonable validity. This study demonstrates that peer assessment is a powerful and valid method to assess for practical clinical skills in a pharmacy setting.

**Spanish Competency Examination as a Prerequisite for Medical Spanish for Pharmacists Course.** Robert Mueller, Concordia University Wisconsin. **Objectives:** Medical Spanish for Pharmacists (Phar575) is an elective course offered to pharmacy students who possess a minimum level of Spanish language competence. This study aimed to develop a process to assess student readiness for the elective course, determine students’ baseline knowledge and skills in course content prior to enrollment, and evaluate the effect of course completion on competency examination results. **Method:** Each student interested in Phar575 was required to pass a competency examination in Spanish consisting of 3 verbal response questions, 10 listening comprehension questions, and 50 multiple choice questions prior to enrollment. Passing was defined as scoring ≥2/3 on the verbal, ≥4/10 on listening, and ≥20/50 on written sections. The competency examination was administered after the course completion. **Results:** Eight students completed the initial competency examination. Two students did not pass the examination due to failing the verbal section (n = 1), listening section (n = 1), or written section (n = 2). Six students passed all three sections of the examination and were permitted to enroll in the course. Two students did not enroll due to scheduling conflicts. Four students ultimately enrolled with average initial competency examination scores of 92%, 68%, and 60% (in verbal, listening, and written sections respectively). After course completion, average competency examination scores increased to 92%, 73%, and 83% (in verbal, listening, and written sections respectively). **Implications:** For courses that require specific or unique knowledge and/or skills, a competency examination may be a helpful tool to assess student readiness prior to course enrollment and to evaluate student learning.

**Standardized Patient Program (SPP) at The University of British Columbia: A Quality Assurance Study.** Tamiz J. Kanji, The University of British Columbia. **Objectives:** Standardized Patients (SPs) are used in the Year 3 Pharmacy Skills course in the University of British Columbia’s current 4-year entry-to-practice BSc(Pharm) program. The objective of this study was to evaluate the Year 3 SP Program (SPP) for quality assurance purposes. The use of SPs in Pharmacy Skills courses demonstrated efficacy for improving clinical skills, patient safety awareness, interprofessional teamwork, self-perceived clinical skills and confidence of student pharmacists. **Method:** Questionnaires were distributed to students in Year 4 and recent graduates of the program to assess the SPP’s ability to: 1) simulate realistic pharmacy situations, and; 2) enhance student confidence and competency in engaging patients during experiential rotations and objective structured clinical examinations (OSCEs). **Results:** Respondents included 60/208 Year 4 students and 38/147 recent graduates. Of Year 4 respondents, 86% indicated that the SPP enhanced their confidence in engaging real patients during experiential rotations, and/or in the workplace, and 93% indicated that the SP scenarios reflected realistic situations encountered in community pharmacies. Of the recent graduate respondents, 100% indicated that SP scenarios prepared them for OSCE counseling scenarios. **Implications:** The SPP simulated realistic pharmacy scenarios and allowed students to practice communication and clinical skills without risk to real patients. Student feedback indicates that the SPP enhanced their competency and confidence in patient interactions in both practice and assessment contexts. Expansion of the SPP in the new entry-to-practice PharmD program is anticipated.

**Structured Mentoring of Junior Faculty Into Successful Co-Coordinators of a Large Team Taught Pathophysiology Course.** Erin K. Hennessey, St. Louis College of Pharmacy, Erica F. Crannage, St. Louis College of Pharmacy, Andrew J. Crannage, St. Louis College of Pharmacy, Theresa R. Prosser, St. Louis College of Pharmacy. **Objectives:** The objective was to develop a mentoring program for new pharmacy practice faculty to become successful course coordinators. **Method:** For five years, first time faculty discussion group leaders in a required, large (> 225 students), team-taught pathophysiology course could opt into a structured mentoring program to become a coordinator in the subsequent year. Program topics included: developing course schedules/syllabi, effective quiz and exam management (blueprints, item writing, review and revision, proctoring, grading, item performance analysis and adjustments), orienting twelve discussion group leaders, facilitating weekly discussion preparatory sessions, reviewing and providing feedback to lecturers on session materials/assignments, effective use of course management software, effectively communicating with students and faculty, managing difficult student situations (academic dishonesty, learning disabilities, suboptimal performance), maintaining course specific tutoring program, and writing end of semester quality improvement reports evaluating achievement of course ability outcomes. **Results:** Mentors ranged from assistant to full professor. Three 2nd year faculty participated. All participants successfully assumed full co-coordinator roles in their 3rd year. The first in turn became lead mentor for subsequent participants. Student performance trends continued to improve and high exam quality/reliability statistics and course evaluations were maintained. A detailed outline/description of process, content, and outcomes will be shared. **Implications:** Course coordination is an important, high level ability, not commonly included in resident certificate programs. Didactic teaching/coordination can be a small percentage of clinical faculty workload, yet is often a component of promotion requirements. Early, structured
mentoring assists junior faculty in successfully assuming pedagogical leadership roles.

**Student Baseline Knowledge and Confidence in Interpretation of Evidence-Based Medicine.** Denise L. Walbrandt Pigarelli, University of Wisconsin-Madison, Amanda Margolis, University of Wisconsin-Madison, Connie K. Kraus, University of Wisconsin-Madison. **Objectives:** To improve the quality of a longitudinal evidence-based medicine (EBM) curriculum by determining gaps in student understanding of EBM concepts and to assess students’ metacognition of their personal knowledge deficits. **Method:** Second-year students were surveyed prior to beginning the drug literature evaluation course. Students voluntarily answered ten knowledge-based and ten confidence-based questions regarding their understanding of EBM concepts such as p-value interpretation, confidence intervals, relative risk, number needed to treat, and use of secondary literature. Knowledge questions included five foils, including one stating “I do not know the answer.” The five-point confidence scale ranged from none to complete confidence. Descriptive statistics were utilized. **Results:** Of the 134 students invited, 119 completed the survey (88.8%). Average confidence ranged from “a little” to “a fair amount”; no students consistently selected “none” or “complete” confidence on all ten questions. The Crohnbach’s alpha score for confidence questions was 0.92. Percent correct knowledge scores ranged from 6.7% to 59.7%. Four of the ten questions demonstrated a pattern where students with lower confidence were more likely to select “I do not know the answer” for the corresponding knowledge question, and students with higher confidence were more likely to select correct answers. **Implications:** These results will assist course instructors in identifying key areas for improving instructional focus across the EBM curriculum. Confidence in knowledge and abilities to interpret and apply EBM concepts are important for students and pharmacists involved in patient care. This survey is a first step in evaluating students’ progress through the curriculum.

**Student Comfort and Perception of Women’s Health Topics Using Lecture and TBL Delivery Methods.** Dana G. Carroll, Auburn University, Emily Armstrong, Auburn University, Philippe R. Gaillard, Auburn University, Jessica Bellone, Concordia University Wisconsin. **Objectives:** The primary objective is to compare student perceptions regarding comfort level with women’s health materials before and after a women’s health elective was offered. In addition, survey responses will be compared between classes delivered by traditional lectures vs team based learning (TBL). **Method:** A pre and post-course survey was administered to assess students’ perceptions in comfort making recommendations regarding women’s health topics. The survey also assessed students’ learning preferences in 2013-14 secondary to course delivery changes (lecture to TBL). All students enrolled in the course were given the survey on the first (pre) and last (post) day of class. **Results:** Ninety-two students were enrolled in the class (2011-14). The response rates were 100% (pre) and 79% (post). For the majority of topics in the course, students’ perceived comfort levels making recommendations improved in the post vs pre survey. This was consistent for both learning formats (lecture vs TBL). Students had limited familiarity or experience with TBL (n = 12, 34%) prior to enrollment in this course in 2013-14. When the course was delivered via TBL, students overwhelmingly reported lecture based course delivery was a beneficial learning method post (74%) vs pre (20%). TBL was not as preferred (26% post vs 50% pre). **Implications:** Students’ perceived comfort in making recommendations related to women’s health improved after completing a semester elective in women’s health, regardless of the method of course delivery.

**Student Confidence in Applying for Post Graduate Training Before and After an Elective Course.** Tiffany L. Kessler, Southerno University, Kristin Montarella, Southwestern Oklahoma State University, Krista G. Brooks, Southwestern Oklahoma State University, Cherri K. Walker, Southwestern Oklahoma State University, Jamie Anderson, Southwestern Oklahoma State University. **Objectives:** As residency positions have become more difficult to obtain, the number of students at Southwestern Oklahoma State University College of Pharmacy applying for and matching with residencies has declined. Two barriers identified by all students included lack of information and confidence in their skills. An elective was developed and offered to 2nd and 3rd year pharmacy students. The primary objective of this study was to evaluate the impact of this course on student awareness of post graduate training opportunities and confidence in the ability to apply for and secure a residency position. **Method:** Student demographic data and perceived confidence regarding specified skills deemed necessary for applying for post graduate training were collected via anonymous survey. Pre-elective and post-elective data was analyzed using dependent t-tests to compare the means of self-reported changes in confidence. **Results:** Students (n = 71) completed the course (88.8%). Overall, the majority of students were female, had a GPA >3.5, and had a high level of organizational involvement. Data with a statistically significant change (p <0.01) included understanding of post-graduate opportunities, confidence in ability to apply for positions and ask questions during the interview, and development of a curriculum vitae, letter of intent, and PowerPoint presentation. **Implications:** Our findings indicate that the elective course had a positive impact on our students. It can provide a framework for other colleges of pharmacy seeking to develop innovative methods to improve students’ confidence in pursuing post graduate training.

**Student Perceived Sufficiency of and Preferences for Career Planning Activities in a College of Pharmacy.** Elizabeth A. Cady, University of Kentucky HealthCare, Lauren A. Payne, University of Kentucky, Nicole F. Keenan, University of Kentucky, Kelly M. Smith, University of Kentucky. **Objectives:** In response to a tightening employment market, an existing, 1-credit hour contemporary issues course served as a platform for career development programming for third-year students. Student opinions regarding effectiveness of programming and preferences for additional guidance were solicited to detect potential gaps and direct future programming. **Method:** Career programming was delivered through career pathway surveys, guest speakers, guided CV development, and an Excel®-based career plan. Entrance (28-point) and exit (49-point) CoursEval® questionnaires measured student attitudes towards and experiences with career preparation and other course features. Multiple response analyses, descriptive statistics and χ2 tests were conducted on the matched pre- and post- data regarding career programming. **Results:** All enrolled (n = 127) students completed both questionnaires. Students overwhelmingly recommended individual advising both before and after course completion. Following the course, the top three recommendations for improvement were to provide additional resources, establish a formal mentor/mentee program, and deliver more practical experiences earlier in the curriculum; additionally, students recommended support be delivered via coursework and guest speaker sessions. There were no statistically significant differences for programming preferences before and after the course, despite the relevant recommendations listed. Students planned to explore future career opportunities through shadowing, conducting formal research, undertaking projects, interviewing pharmacists, and attending professional organization meetings and residency showcases. **Implications:** In recognition of a changing job market and ACPE accreditation standards, pharmacy schools should enhance their approach to student career development. By assessing student-perceived gaps and continued needs, schools can develop resources to meet the standards and graduate career-equipped pharmacists.
Student Perceptions of a Spanish for Pharmacists Elective in a Pharm.D Program. Ashley Woodruff, University at Buffalo, The State University of New York, Jovin Panthapattu, University at Buffalo, The State University of New York, Nicole Paolini-Albanese, University at Buffalo, The State University of New York, Gina M. Prescott, University at Buffalo, The State University of New York. Objectives: A Spanish for Pharmacists elective was developed in order to promote culturally sensitive students. The primary objective of this study was to assess student perception of this elective. Method: A 25-question, IRB-approved survey was distributed with the course final exam in fall 2014. Students were instructed to drop off an anonymous survey, whether they completed it or not, in a sealed box. Survey sections included demographics and pre- and post-course comparison ratings. Spanish languages skills were assessed descriptively. The following were assessed with a 5-point Likert Scale: Hispanic culture sensitivity, patient assessment, self-care recommendations, patient medical history taking and medication counseling for Spanish speaking patients. All data was entered and analyzed in an Excel spreadsheet after grades were submitted. Results: Eighteen out of 20 course participants completed the survey (90% response rate). Students’ perception of this course was generally favorable. An increase in overall speaking (78%) and reading (61%) proficiency was reported for 15 and 12 students, respectively, both p < 0.01. Students reported an increase in their Spanish-abilities in the area of patient assessment (median = 4.5, IQR 4-5), self care (median = 4, IQR 4-5), medical history taking (median = 4, IQR 4-5) and counseling (median = 5, IQR 4-5). Hispanic cultural sensitivity was only slightly increased (median = 3, IQR 3-4). All students would recommend this course to others. Implications: The first offering of this elective was well received and will be offered to students again in the future. Consideration should be made to increase the cultural sensitivity component.

Student Perceptions Regarding the Integration of a Medication Therapy Management Certificate into the Pharmacy Curriculum. Jennifer L. Donovan, MCPHS University–Worcester/Manchester, Jason E. Cross, MCPHS University–Worcester/Manchester, Paul P. Belliveau, MCPHS University–Worcester/Manchester, Cheryl Abel, MCPHS University–Worcester/Manchester, Amanda Morrill, MCPHS University–Worcester/Manchester, Anna K. Morin, MCPHS University–Worcester/Manchester, Michael J. Malloy, MCPHS University–Worcester/Manchester. Objectives: Our school integrated the American Pharmacist Association’s Delivering Medication Therapy Management (MTM) Services program into its curriculum in response to pharmacy employers’ expectation that MTM is an entry-level competency. We assessed student perceptions of the MTM program integrated into our accelerated doctor of pharmacy program. Method: The MTM program was integrated over three semesters for students on our main and distant education campuses. Students were required to complete the self-study modules, self-assessment examination, and pre-seminar cases before attending the live seminar. Upon completion of the MTM self-study examination, students were prompted to complete the required evaluation via the seminar evaluation developed by APHA. This evaluation measures participants’ perceptions regarding (1) program quality, (2) effectiveness of active learning exercises, (3) importance of content to pharmacy practice, (4) likelihood of incorporating the information in practice and (5) likelihood of recommending the program to a colleague. Results: Evaluation were completed by 290 (100%) students. The quality, activity effectiveness, and importance of content to practice were each rated as “excellent,” “very good,” or “good” by at least 90% of students. Furthermore, 87% and 92% would incorporate the content into their practice and would recommend this program to a colleague, respectively. Implications: Students perceived the integration of APHA’s MTM program into an accelerated doctor of pharmacy program as a positive and valuable experience.

Student Perceptions and Effect on Clinical Confidence of a Dual-Elective High-Fidelity Simulation-Based Activity. Kamila A. Dell, University of South Florida, Gwenolyn Wantuch, University of South Florida. Objectives: Describe the effect of a joint simulation activity incorporating two elective courses on student perceptions and clinical confidence. Method: Third year pharmacy students from clinical nutrition and critical care electives were paired and completed a high-fidelity simulation with inclusion of low-tech mannequins as patients and faculty acting as health care professionals. Students were responsible for assessment of a septic patient utilizing a patient chart, visual and verbal evaluation of the patient and surroundings at bedside, and communication with other healthcare providers. Upon completion, students had 1 hour to design a therapeutic care plan, including initiation of a TPN. A survey was administered post-simulation to evaluate change in confidence and overall perceptions of the simulation. Wilcoxon signed rank test was utilized to evaluate significance of results. Results: There was a positive change in confidence seen in 7 of 8 assessed areas (p<0.05). These included identifying drug errors, communication with healthcare professionals, writing a clinical care plan in a limited time frame, writing a TPN, looking up information in a patient chart, writing a comprehensive therapeutic plan, and identifying inappropriate medication usage. Students felt less confident in calculating drip rates after the simulation (p<0.05). Student perceptions were overwhelmingly positive and they felt better prepared for clinical rotations. Implications: A simulation based learning activity including students from two electives increased students’ clinical confidence. Plans for the future include increasing the number and complexity of the simulations between the two electives.

Student Perceptions of Digital Badges in a Drug Information and Literature Evaluation Course. Jay R. Fajiculay, Purdue University / Lilly / FDA, Bhavini T. Parikh, Casey V. Wright, Purdue University – OIRAE Informatics, Amy H. Sheehan, Purdue University. Objectives: Digital badges are electronic representations of individual accomplishments that utilize gamification to enhance learning. The objective of this project is to describe student perceptions of digital badge implementation within a drug information and literature evaluation course. Method: Two digital badges were developed as optional learning opportunities within the course. Each digital badge consisted of 4 challenges which required students to successfully complete a variety of tasks including online quizzes and submission of written work and video presentations. Awarded digital badges could be shared via Facebook and LinkedIn. All students (n=153) were invited to complete an electronic survey instrument before and after digital badges were introduced. Results: The response rate was 69% (106/153). At baseline, 53% (56/106) of respondents agreed that digital badges could help them better understand course material, and 44% (47/106) agreed that digital badges could motivate them to learn additional course material. Although only 19% (20/106) agreed they would display an earned badge on Facebook, 68% (72/106) agreed they would display the badge on LinkedIn, with 57% (60/106) agreeing that employers would look positively on digital badges. Of the 11 students who earned a digital badge during the course, 81% (9/11) agreed that badges were a useful adjunctive teaching method, 45% (5/11) agreed badges helped them to better understand course material, and 45% (5/11) agreed badges motivated them to learn additional course material. Implications: The results from this study highlight the potential value of digital badges as an adjunctive learning tool.
Student Perceptions of a Case-Based Course Aligned with a Therapeutics Module. Shannon Heintz, Iowa City VA Medical Center, Hayley R. Wittnebel, The University of Iowa, Stevie R. Veach, The University of Iowa. **Objectives:** Assess student perceptions of a flipped-classroom, case-based course aligned with a Therapeutics module using a collaborative small group learning approach. **Method:** This is a required course in the third year of a four-year Pharm.D. curriculum that previously utilized a teacher-centered approach with case discussions. The course was “flipped” to allow for small group, collaborative learning involving patient cases that were directly aligned with a concurrently delivered therapeutics course. Students were randomly placed in teams of three and assigned two cases throughout the semester. Students, as a part of their team, identified drug therapy problems, made recommendations and developed presentations. Then students individually presented this information to their assigned section. Students received feedback on clinical and presentation skills. After completion of the course, the class was surveyed regarding their perception of the course changes. **Results:** 106 of the 107 students completed the survey. The vast majority of the class felt that aligning the course with Therapeutics allowed for a greater understanding of the concepts (95%) and improved their ability to apply therapeutic knowledge to patients (98%). One of the more varied responses was whether it was fair to include topics that haven’t yet been covered in therapeutics—60% yes, 40% no. The majority of the class (87%) felt there was too much inconsistency in complexity among cases. **Implications:** Based on the overwhelmingly positive responses, it is evident that students enjoy learning in a collaborative environment that allows for direct application of knowledge that was recently obtained in a didactic course.

Student Performance and Confidence after Implementation of a Journal Club. Kim G. Adcock, The University of Mississippi, Ashley S. Crumby, The University of Mississippi, John P. Bentley, The University of Mississippi. **Objectives:** To determine whether incorporating journal club activities into our first-professional year, drug literature evaluation course improved student performance and confidence. **Method:** A retrospective evaluation of course data from 2012 (n = 116), 2013 (n = 122), and 2014 (n = 116) was conducted. In 2014, course instructors incorporated journal club activities, including answering questions about eight assigned research articles and attending two different journal clubs based on these articles. Articles were selected by instructors, but the students self-selected which journal club to attend at the beginning and end of the semester. Students in 2012 and 2014 completed an identical in-class assessment conducted at the end of the course involving a critique of the same instructor-selected research article (not included as part of the journal club). Students in 2013 and 2014 completed identical measures of confidence concerning their statistical methods abilities at the end of the course. **Results:** The average score on the assessment was significantly higher in 2014 (87.9%) compared with 2012 (84.2%) (p = 0.002; Cohen’s d = 0.42), even after controlling for exam performance. Comparison of the 2013 and 2014 classes revealed that students expressed more confidence at the end of the course in their ability to interpret statistical results in 2014 (p = 0.013; Cohen’s d = 0.33). Anecdotal comments from students in the 2014 class at the second journal club meeting were positive. **Implications:** With the incorporation of journal club activities, students’ article critique scores improved as did some measures of confidence. By adding a practical application, students appear to be better prepared to understand and evaluate the biomedical literature.

**Student Versus Preceptor Perception of Competency Performance during Introductory Pharmacy Practice Experiences.** Erin M. Behnen, Southern Illinois University Edwardsville, Kate Newman, Southern Illinois University Edwardsville, William R. Wuller, Southern Illinois University Edwardsville, A. James Moulton, Southern Illinois University Edwardsville. This quality improvement initiative sought to determine student preferences for different team based learning (TBL) strategies utilized in a pharmacotherapy course. **Method:** Pharmacotherapy instructors incorporated TBL strategies into each unit of the semester-long course using personal preference to determine delivery methods for pre-recorded lectures, individual readiness assessment tests (IRATs), team readiness assessment tests (TRATs), and cases. Instructors assessed student preferences using a clicker-response survey at the end of the semester. **Results:** Instructors utilized TBL in seven lecture periods. Multiple mini-lectures were pre-recorded for two of the periods, one large lecture for four, and a reading assignment for one. Students completed the IRATs/TRATs via paper five times, clicker-response once, and Blackboard Learn once. Each TBL group received the same case for every period except one. The TBL groups completed multiple focused patient cases for three of the periods, one in-depth case for three, and no case for one. Approximately 74% of students completed the survey. The majority of the class preferred multiple pre-recorded mini-lectures (mini-lectures 45%, one large lecture 28%, no preference 7%, not applicable 20%) and paper-based IRATs/TRATs (paper 73%, clickers 10%, Blackboard Learn 10%, no preference 7%). Students preferred when all groups received the same case (same cases 60%, different cases 12%, no preference 28%) but also wanted multiple focused cases rather than one in-depth case per topic (multiple focused cases 63%, one in-depth case 23%, no preference 13%). **Implications:** The results will be used to standardize the delivery of TBL in the future and can be applied to other programs/courses developing TBL.
Successful Didactic Course Remediation in an Accelerated Program.
Emily R. Esposito, Sullivan University, Vinh D. Nguyen, Sullivan University, Amber Riesselman, Sullivan University, Frank P. Facione, Sullivan University, Kimberly K. Daugherty, Sullivan University.

Objectives: To assess the impact of a clinical research ethics elective course on student decision-making and perspective on ethical questions. Method: Ethical decision making is the cornerstone of modern patient-centered pharmacy practice. Offered to second-year PharmD students, this elective course was designed to teach ethical research concepts within the framework of a group reading experience employing active learning through facilitated group discussion. The book chosen was The Immortal Life of Henrietta Lacks by Rebecca Skloot.

Implications: The study data should provide guidance to Schools in planning for meeting 2016 ACPE standards regarding curricular integration.

Teaching Clinical Research Ethics through Group Reading Experience and Active Learning. Daniel R. Malcom, Sullivan University.

Objectives: To assess the impact of a clinical research ethics elective course on student decision-making and perspective on ethical questions. Method: Ethical decision making is the cornerstone of modern patient-centered pharmacy practice. Offered to second-year PharmD students, this elective course was designed to teach ethical research concepts within the framework of a group reading experience employing active learning through facilitated group discussion. The book chosen was The Immortal Life of Henrietta Lacks by Rebecca Skloot.
Students were assessed pre- and post-course using ethical scenarios covering a wide range of topics including protection of human subjects, tissue/cell ownership by patients, and profit-seeking in the scientific process, among others. Students also wrote a formal position paper in response to an ethical decision prompt. Students were assessed via pre- and post-course survey over their familiarity with and confidence in making decisions related to various ethical topics using a 5-point Likert scale. **Results:** Sixteen students were enrolled in the course, with 14 (87.5%) completing all pre- and post-course assessments. Overall, students showed significantly more familiarity with the topics covered after the course versus before (p < 0.05), also reporting improved confidence (p < 0.05) in making decisions related to the topics. **Implications:** Through the course, students showed increased familiarity with the history of clinical research and all ethical topics discussed as well as improved confidence in making decisions related to research ethics. Students also enjoyed the group reading experience and discussion format used.

**Teaching and Assessment Practices in Integrated Pharmacotherapy Laboratories: A Mixed Methods Study.** Dean S. Collier, University of Nebraska Medical Center, Gary C. Yee, University of Nebraska Medical Center, Tim Guetterman, University of Nebraska Lincoln, Jessica L. Jonson, University of Nebraska Lincoln. **Objectives:** The purpose of this study was to evaluate pharmacotherapy (PT) laboratories at a Midwestern university and identify: 1) course objectives and programmatic outcomes addressed, 2) teaching and assessment practices at a Midwestern university and identify: 1) course objectives and section coordinators (N = 5) needed for stronger alignment with the laboratory. **Results:** Using an explanatory sequential mixed methods design, we began with a quantitative survey of PT laboratory course and section coordinators (N = 8) responsible for major disease areas. To better understand the survey results, we conducted a follow-up phase of in-depth qualitative interviews with key informants (N = 9) representing all 15 PT sections. Interviews focused on implementation and issues encountered, promising practices. **Method:** Using an explanatory sequential mixed methods design, we began with a quantitative survey of PT laboratory course and section coordinators (N = 8) responsible for major disease areas. To better understand the survey results, we conducted a follow-up phase of in-depth qualitative interviews with key informants (N = 9) representing all 15 PT sections. Interviews focused on implementation and issues encountered in the labs. We then analyzed the interviews (notes and transcripts) with MAXQDA qualitative software using thematic analysis for key statements, meaning units, and structural descriptions. **Results:** The integrated qualitative and quantitative results revealed several PT course objectives needing stronger alignment with the laboratory. The most frequent effective teaching approaches were class/small group discussion, instructor-developed cases, group presentation/reports, recitation, and lecture. Assessment practices revealed variation among instructors’ perceived lab “stakes” and questions about how well quizzes differentiate. Performance tasks and rubrics emerged as a promising practice to assess learning outcomes. **Implications:** Aligning PT course objectives with the laboratory reinforces learning. For example, simulations with standardized patients and providers, an underutilized method: using a 5-point Likert scale.

**Team-Based Learning (TBL): A Faculty’s Perspective Over Multiple Semesters.** Golden L. Peters, St. Louis College of Pharmacy, Clark Kebodeaux, St. Louis College of Pharmacy, Paul Stranges, St. Louis College of Pharmacy, Jamie Shelly, St. Louis College of Pharmacy, Nicole M. Gattas, St. Louis College of Pharmacy, Peter D. Hurd, St. Louis College of Pharmacy, Scott M. Vouri, St. Louis College of Pharmacy. **Objectives:** Evidence evaluating faculty perception of team-based learning (TBL) compared to traditional lectures is limited. Previous qualitative research determined faculty enjoyed TBL based on increased student interaction from TBL but noted increased design time for class. Perceived workload was not measured. We determined faculty perception of workload and student involvement before and after implementing TBL in a required self-care course, comparing previous experience with traditional lecture to multiple semesters with TBL. **Method:** TBL was implemented in the self-care course and continued for an additional three consecutive semesters. Faculty members’ perception of TBL was captured using an anonymous survey. The questionnaire included 11, 5-point Likert scale questions to identify changes in workload, training, and student interaction using TBL. **Results:** Twenty-eight responses (100% response rate) were collected from faculty who taught in at least one of the four semesters. Results were aggregated based on the number of semesters faculty taught in the course. 100% of respondents who taught 3+ semesters (n = 11) felt TBL student participation either slightly or dramatically increased compared to traditional lecture. While 77% reported TBL increased workload over the initial two semesters, only 35% reported increased workload after three semesters. After one semester of TBL, 26% of respondents reported increased workload while 63% reported no change or a decline in workload. **Implications:** This is the first study to measure the impact of TBL implementation with multiple faculty members in a self-care course over multiple semesters. This data can be used to help implement TBL in pharmacy school curricula.

**The Design, Implementation, and Evaluation of a Pediatric Specialization at a School of Pharmacy.** HollyAnn R. Russell, Lisa M. Bimpasis, Southern Illinois University Edwardsville, Miranda Nelson, Southern Illinois University Edwardsville. **Objectives:** To describe the implementation of a pediatric specialization in a doctor of pharmacy (PharmD) program as well as to evaluate students on the appropriate knowledge, skills and attitudes for treating the pediatric population. **Method:** A pediatric specialization track was created consisting of

a 3-credit didactic elective course, a 1-credit pediatric focused independent study, and two advanced pharmacy practice experiences (APPES). Both APPES are required to occur at pediatric institutions with the second being more rigorous and provided only by faculty members. Results: A survey instrument evaluating student knowledge, skills and attitude was administered in the fourth professional year. Students completing extra didactic pediatric coursework demonstrated elevated levels of knowledge, skills and increased interest in pursuing careers as pediatric pharmacists. Implications: Pharmacy students enrolled in a pediatric specialization are more likely to consider careers in pediatrics and demonstrate greater retention of knowledge and skills related to pediatrics.

The Effect of Framing Relative and Absolute Risk Upon Clinical Decision Making in Pharmacy Students. Jonathan D. Ferrence, Wilkes University, Elizabeth Cook, Wilkes University, Megan Parsi, Wilkes University, Daniel S. Longshorre, Wilkes University. Objectives: The purpose of this study was to test whether student pharmacists’ therapeutic decision making is influenced by their perception of benefit when information is presented in absolute or relative terms. Method: Students from all four years of the professional program responded to an online questionnaire as to their choice of two equally efficacious medications for the management of a hypothetical serious condition. The benefits of each were presented as either relative or absolute risk changes. Students could choose either medication alone, indicate indifference to the choice of medication or choose not to answer. Standard chi-squared contingency table methods were used to test for associations between variables. The protocol was approved by the Wilkes University Institutional Review Board and statistics performed using IBM SPSS Statistics version 22 (Armonk, NY). Results: Respondents included 167 students (63% response rate). 67.7% of students chose the medication whose benefits were presented in relative terms and 9.0% of students chose the medication whose benefits were presented in absolute terms. 21% of students were indifferent to the choice of medication and 2.3% could not decide. This result was not expected by chance alone (χ² = 174.0). With the exception of a direct P3 to P4 comparison (11.1% vs. 29.5%, p = 0.022), there was not a significant difference between class years at identifying the equality between absolute and relative risk reductions presented. Implications: Students’ perception of benefit (or risk) may be influenced by whether it is presented in relative or absolute terms, which could have a profound effect upon decision making.

The Effect of an Interactive Activity on Pharmacy Students’ Ability to Critique Nonprescription Commercial Advertisements. Derek J. Charron, MCPHIS University–Worcester/Manchester, Kaelen C. Dunican, MCPHIS University–Worcester/Manchester, Cheryl Abel, MCPHIS University–Worcester/Manchester. Objectives: Determine the effect of a group activity within a required Self Care Therapeutics course on students’ ability to critique direct-to-consumer (DTC) advertising using a 6 question survey. Method: All first year doctor of pharmacy students enrolled in the required Self-Care Therapeutics course were eligible to participate in 2 anonymous, voluntary surveys at beginning and end of the course. During the first week of the course, students were asked to view a DTC nonprescription drug commercial advertisement and answer 6 questions regarding the content and delivery of the information, including accurate portrayal of the mechanism of action (MOA), omission of pertinent information, adverse event disclosure, potentially misleading statements, and identifying whether patients will likely use the product appropriately. Students worked in small groups to identify and critique another DTC nonprescription drug commercial and present their findings. Finally, all students were shown a third DTC commercial, and the initial survey was repeated. Results: When comparing the results from the 2 surveys, the difference in response from the beginning to the end of the semester was negligible for most questions (0.99% to 3.71%). The largest change was shown in two categories: accurate depiction of MOA (increased 9.43%) and onset of action depicted appropriately (decreased 14.9%). Implications: Critical analysis of DTC advertising as a group project enhances students’ ability to detect inaccuracies in commercials with regard to the pharmacokinetic profile of nonprescription medication.

The Impact of Multimodal Reinforcement Activities on Exam Performance. Sara A. Al-Dahir, Xavier University of Louisiana, Ifeanyichukwu O. Onor, Xavier University of Louisiana. Objectives: Optimization of in-class time via problem-based learning, application exercises and on-line practice are employed routinely in the pharmacy curricula. The purpose of this study is to assess the impact of student engagement in multimodal reinforcement activities with performance on examination questions. Method: We compared student performance on examination questions mapped to learning objectives covered by multimodal reinforcement activities to student performance on examination questions mapped to learning objectives delivered via traditional lectures without reinforcement activities. Two courses were selected for this analysis: Basic & Clinical Nutrition (N = 159) & Applied Pharmacokinetics (N = 137). The reinforcement activities were at the discretion of the lecturer and included: independent assignments, group assignments, on-line exercises, reflections, and calculation exercises. Data from three unit exams for each course was included in the analysis. We compared the percent correct response on examination questions with or without reinforcement activities. Results: A total of 174 multiple-choice questions were evaluated, with 51 questions (29%) linked to reinforcement activities. The mean percent correct response on exam questions with multimodal reinforcement activities was significantly higher than the mean percent correct response on exam questions without multimodal reinforcement activities (Mean: 84.6% vs. 72.7%, p = 0.001). There was positive correlation observed with reinforcement activities on the percent correct questions on examination questions (R = 0.258; R² = 0.067, p = 0.001). Implications: We recommend course reinforcement sessions using different modalities to enhance student learning and performance on examination questions.

The PharmSci and Pharmacy Connection Hour (PPCH). Patrice L. Jackson-Ayatunde, University of Maryland Eastern Shore, Dana R. Fasanella, University of Maryland Eastern Shore, Tadas S. Vasaitis, University of Maryland Eastern Shore, Jayesh R. Parmar, University of Maryland Eastern Shore, Yen H. Dang, University of Maryland Eastern Shore, Madan K. Kharel, University of Maryland Eastern Shore, Lynn A. Lang, University of Maryland Eastern Shore, Gretchen I. Riker, Winn Army Community Hospital. Objectives: PPCH is an in-class case-based active learning exercise that was developed and implemented at the UMES-SOP in Fall 2013 and 2014 for first (SP1) and second (SP2) year pharmacy students. The purpose of PPCH is to improve student comprehension of the connection between the basic sciences and therapeutics in a three year accelerated PharmD program. Method: PPCH case studies include therapeutics and pharmaceutical sciences based questions to determine the optimal drug therapy for the patient. During the exercise, faculty from both pharmacy practice and pharmaceutical sciences jointly facilitate the in-class discussion. A 5-point Likert scale survey of 8 questions was developed to measure the students’ attitudes and opinions of PPCH. Survey responses were analyzed using Pearson’s Chi-square to determine the effect of PPCH in SP1 and SP2 years. An additional composite variable (cumulative
Objectives: To evaluate residents’ self-assessment of their teaching utilizing descriptive statistics.

Results: There was a significant difference in the composite variable (Chi-sq = 54.92, p < 0.01, CI = 95%) between the SP1 (N = 49) and SP2 (N = 46) years in fall of 2013. Responses for question number 5 showed a significant difference (Chi-sq = 9.91, p = 0.04, CI = 95%) between SP1 (N = 40) and SP2 (N = 26) years in fall of 2014. Based on the results, the SP1 classes of Fall 2013 and Fall 2014 were more receptive to the implementation of the PPCH exercise. Implications: In comparison to the SP2 classes, PPCH had a more positive effect on SP1 students of Fall 2013 and 2014. Therefore, the PPCH should continue to be implemented in the SP1 didactic curriculum.

The Use of an Auditory Hallucination Simulation to Increase Empathy in Third Year Pharmacy Students. Elizabeth T. Skoy, North Dakota State University, Heidi Eukel, North Dakota State University, Jeanne E. Frenzel, North Dakota State University, Amy B. Werremeyer, North Dakota State University. Objectives: To determine if participation in an auditory hallucination simulation increases empathy. Method: After receiving a didactic lecture on psychiatric disorders commonly associated with auditory hallucinations, students participated in a laboratory exercise centered on an auditory hallucination simulation, titled “Hearing Voices.” During the simulation, each student used a headset to listen to a commercially-available audio recording of “voices” simulating what an individual with auditory hallucinations experiences. Simultaneously, students completed a series of seven stations which required the use of everyday skills: communication, reading comprehension, and following directions. At the end of the simulation, students participated in a faculty-lead discussion to reflect on the activity. The faculty leader documented commonly reported feelings on a white board during the discussion. Students completed the Kiersma-Chen Empathy Scale before and after the laboratory exercise. Results: Eighty-one third year professional pharmacy students participated in the “Hearing Voices” laboratory exercise. Analysis showed the overall empathy scale increased from a mean score of 83.68 to 87.64 after participating (p < 0.05) and students showed a statistically significant gain in empathy (p < 0.05) in 13 out of the 15 questions. The three most common feelings reported in the group discussions were distraction, difficulty concentrating, and frustration. Implications: An auditory hallucination simulation was an effective activity to increase student empathy.

Three Year Assessment of the Accuracy of Resident Self-Evaluation of Teaching in an Elective Course. Melissa M. Chesson, Mercer University, Nicole L. Metzger, Mercer University, Kathryn M. Momary, Mercer University. Objectives: To evaluate residents’ self-assessment of their teaching in an elective course compared with students’ and course faculty’s perception of their teaching over a three year period. Method: An elective course offered to pharmacy students was designed to provide didactic teaching opportunities for PGY1 pharmacy residents. Each resident selected a topic and submitted objectives, lesson plan, to provide didactic teaching opportunities for PGY1 pharmacy residents. Residents also strongly agreed that faculty feedback was constructive. Implications: During a three year period, residents accurately self-evaluated their teaching, which may be the result of detailed feedback provided by faculty during residents’ preparation for the course. Residents can be used to provide quality didactic instruction when faculty are involved in lecture development.

Traditional Lecture vs. Jigsaw Learning Method for Teaching Medication Therapy Management (MTM) Core Elements. Jennifer A. Wilson, Wingate University, Angela H. Pegram, Wingate University, Dawn M. Battise, Wingate University, April Robinson, Wingate University. Objectives: Compare the use of traditional lecture vs. jigsaw learning method to teach the MTM core elements in a first year pharmacy school course. Method: The jigsaw learning method is a cooperative learning strategy that requires students to assume responsibility for learning, and subsequently teaching peers, a portion of material. Fall and Spring sections of the course were given an online MTM knowledge pre-test prior to starting the MTM section. After MTM was taught, using traditional lecture in the Fall (n = 47) or jigsaw method in the Spring (n = 46), the students were given the MTM knowledge post-test, and surveyed on perceptions of teaching method used. Researchers evaluated demographics using descriptive statistics, pre/post-tests scores using two-sample t-tests, and perception data using Kruskal-Wallis test. This study was approved by the university research review board. Results: A total of 45 and 43 students completed both the pre- and post-test in the Fall and Spring, respectively. Student perceptions of teaching method statistically favored the jigsaw method over traditional lecture for improvement in problem solving skills, listening/communication skills, and encourage of cooperative learning (p = 0.018, 0.025 and 0.031, respectively). However, improvement in post-test scores favored the traditional method (p = 0.001). Implications: The jigsaw learning method was perceived as more beneficial in building soft skills necessary for cooperative learning due to the group interaction; however, students seemed to retain more information regarding MTM when taught using more traditional methods. Further research is needed to determine if a combined teaching method would build soft skills and lead to retention.

Transitioning to Paperless Classes: Implementing a Going Green Initiative. Rosalyn P. Vellurattil, University of Illinois at Chicago, Marieke D. Schoen, University of Illinois at Chicago, Kristin Cree, Christopher Schumpp. Objectives: In order to reduce cost and paper waste, UIC College of Pharmacy implemented a “going green” initiative for volunteer courses. “Green” designated classes encouraged students to pursue technology augmented note-taking and studying. The objective of this study is to describe implementation of a “going green” initiative and to share results and outcomes. Method: A student-led committee was formed to provide instructors and students assistance with going green. The committee provided instructors with a list of seven tips for making course documents accessible for paperless courses. They also conducted eight student tutorials about available technology options, and created an informational website. After two years, students were surveyed for quality improvement purposes. Results: Thirty courses transitioned to paperless during the 2013-2014 academic year. All students (n = 611) from the affected courses were surveyed regarding the going green initiative. A total of 196 students responded to the survey. Approximately 57% of students (n = 111) preferred taking notes with paper handouts, while 38% (n = 74) used electronic devices. Of the students using electronic devices, 27% (n = 20) still preferred paper notes. On average, more students preferred paper notes for pathophysiology, medicinal chemistry,
pharmacokinetics, and therapeutics courses compared to all other courses (103 [53%] vs 59 [28.6%]). Challenges for students in the green courses included limited numbers of classroom power outlets, internet connectivity issues, and inadequate battery life of portable electronics. **Implications:** Going green requires student and faculty buy-in, adequate technology infrastructure, and consistent quality improvement assessment during the transition.

Uncited or Poorly Cited Articles in the Pharmaceutical Literature. Krista G. Brooks, Southwestern Oklahoma State University, Dennis F. Thompson, Southwestern Oklahoma State University, Morgan D. Greutman. **Objectives:** Citation of an article in the literature is a surrogate marker of its usefulness to the discipline as a whole. Our goal was to determine the percentage of uncited or poorly cited articles in pharmaceutical literature. **Method:** We identified 96 journals representing pharmaceutical literature in the Web of Science which published ≥ 20 articles/year. Journals were searched using the journal title (SO = Pharmacotherapy) and publication year (PY = 2008). Document type was limited to articles only. Article output was ranked for total citation, low to high, from 2008 to 2013. Articles were then counted for zero citations and ≤ 5 citations (average ≤ 1 citation/year). **Results:** A total of 13,786 articles were published in 2008 by these 96 pharmaceutical journals. A total of 799 articles (6%) were not cited in the 2008 to 2013 timeframe. A total of 5,040 articles (37%) received less than 1 citation/year. These data are consistent with similar results obtained by evaluating citation rates of original articles in the cardiovascular literature, which revealed that 15% of articles were uncited and 33.3% had 1 to 5 citations over a 5 year period. **Implications:** Our data suggests that over one-third of pharmaceutical literature remains poorly cited (≤ 1 citations per year) in the literature after 5 years and is largely concentrated in a few journals. The data appears to be similar to what is seen in other disciplines. It is possible that up to one-third of the literature in some disciplines are minimally utilized by the scientific community.

Use of Educational Games in a Public Health Course. Gary D. Theilman, The University of Mississippi. **Objectives:** A two-hour “Preventive Medicine and Public Health” course in the spring of the P3 year is the only “stand-alone” course in a semester dominated by an integrated pharmacotherapy sequence. We attempted to improve student engagement with the course, which was perceived as being a distraction from the “important” coursework. **Method:** Educational games were developed that could be played in an auditorium setting. Games included: “Scruples”, in which student teams were given dilemma cards reflecting ethical controversies; “Wits and Wagers”, in which students placed bets on answers related to health insurance; “Prescription Wars”, in which teams competed against each other in real-time by buying and selling diverted controlled substances; A “Family Feud” game with questions related to public health statistics; A “$25,000 Pyramid” game with categories such as “Things a public health pharmacist might do”; An online scavenger hunt in which students competed to find information on the Department of Health website. For some games (such as “Scruples” and “Family Feud”), student teams were asked to develop their own sets of questions that were used during the class. **Results:** The median score on the post-course evaluation question “Did the instructor’s classroom lectures and activities help you in learning the material?” increased by one rank on a 5 point Likert-scale. Items related to perceived course difficulty and overall performance also improved. Course grades were not adversely affected. **Implications:** Engaging students in a course perceived as “less important” can be challenging. Including educational games is one strategy for increasing student interest.

Use of Interprofessional Simulated Patient Care Experiences to Enhance Students’ Learning on Ventilator Bundle Implementation. Catherine E. Renne, Drayton A. Hammond, University of Arkansas for Medical Sciences, Ashley S. Wilson, University of Arkansas for Medical Sciences, Kendrea M. Jones, University of Arkansas for Medical Sciences. **Objectives:** To describe outcomes from an interprofessional (IP) simulated patient care experience (SPCE) on ventilator bundle (VB) implementation. **Method:** Third-year pharmacy students enrolled in a critical care elective reviewed online modules (VB, pharmaceutical management in mechanical ventilation and IP collaborative practice) prior to the SPCE. Pharmacy, medical and respiratory care students participated in a high-fidelity SPCE on VB implementation. After the SPCE, students completed the validated, 30-item TeamSTEPPS Questionnaire and reflection papers to assess their perceptions towards team structure, leadership, situation monitoring, mutual support and communication as each relates to patient care and safety. Likert scale items (1 = strongly disagree, 5 = strongly agree) assessed student perceptions in five categories (maximum score = 30). Perceptions were quantified using descriptive statistics (mean, SD). Two investigators independently used the cutting and sorting technique to analyze students’ reflections qualitatively. The institutional review board determined this research to be exempt. **Results:** Eleven students completed the TeamSTEPPS Questionnaire after participating in the SPCE. Students’ perceptions on teamwork were as follows: team structure (28.6, 2.2), leadership (28.9, 1.6), situation monitoring (28, 2.5), mutual support (26.5, 3.6) and communication (26.8, 2.3). All students answered agree or strongly agree on 23 items (76.7%). Three main themes were identified from qualitative analysis, including team communication (81.8%) and roles and responsibilities of different professions (81.8%). **Implications:** Students had strong, positive perceptions of teamwork after participation in an SPCE focused on VB implementation. SPCEs should be employed in critical care electives to expose students to IP collaboration and facilitate the application of critical care knowledge.

Use of Non-Cognitive Admission Variables to Predict Academic Performance of First-Year Pharmacy Students. Rondall E. Allen, South University, Kendrea A. Bryant, Xavier University of Louisiana, David A. Latif, University of Charleston. **Objectives:** The objectives are two-fold: 1) Determine if non-cognitive admission variables can predict academic performance at the end of the first professional year and 2) Determine if the traditional cognitive admission variables (pre-pharmacy and math-science GPA and PCAT) can predict academic performance at the end of the first professional year. **Method:** Students were interviewed by two faculty using a structured interview. They were evaluated in six domains to include leadership, empathy, social awareness, integrity, problem solving, and knowledge of the profession. A rubric was used to score each domain on a five point scale (1 = poor, 5 = excellent). The mean total interview score and the mean individual domain scores of the faculty pairs along with the traditional cognitive admission variables were used in the analysis. **Results:** Results of the 136 admitted students to the Class of 2016 indicated the following: Using regression analysis there was no statistically significant relationship between non-cognitive admission factors and first year pharmacy GPA. In addition, regression analysis revealed a significant relationship between cognitive measures (i.e., pre-pharmacy GPA, Math-Science GPA, PCAT percentile score) and first-year pharmacy GPA (p < 0.01). **Implications:** The obtained results reveal that the theoretical constructs of non-cognitive attributes are separate from cognitive attributes such as GPA and PCAT scores. As pharmacy continues its transition to a more patient centered profession it is imperative that student pharmacists obtain the requisite non-cognitive skills necessary to succeed in this environment.
Use of Online Meeting Services in a Live, Synchronous, Discussion-Based Course. Jeremy R. Fox, Shenandoah University. Objectives: Discussion-based courses have been limited by an inability to capture interactions between participants in a meaningful way. The spontaneity produced within a discussion disallows revisiting content presented, causing avoidance of this otherwise beneficial course format by many students and instructors. Online meeting technology, however, can provide an opportunity to capture these interactions due to recording options and provides a vehicle for more robust content sharing. Student and faculty perspectives of using this technology in the classroom will be presented. Method: An online meeting service, Google Hangouts, was utilized during an elective course as a way to capture student presentations and live discussions. Recorded content was seamlessly recorded to the faculty member’s YouTube channel, which was made available to all of the students within the course. Course evaluations, student essays, and faculty perceptions about the use of this technology will be presented. Results: Students enjoy the discussion-based courses, but there were mixed feelings about the use of Google Hangouts according to their essays and course evaluations. Benefits include screen sharing and video capture of the student presentations and discussion for future use; limitations include unfamiliar technology for students, student discomfort due to video recording, and technical difficulties that limit quality of the recording. Implications: Online meeting services such as Google Hangouts can be a powerful tool for live, in-person discussions. Further planning, development and research is necessary to determine the full potential of this novel use of technology.

Use of a Flipped Classroom to Provide Maternity Leave Teaching Coverage. Nicole Wegrzyn, Pacific University Oregon, Melanie Petilla Foeppel, Pacific University Oregon. Objectives: At our institution, leaves of absence granted in accordance with the Family and Medical Leave Act (FMLA) often require other faculty members to adopt teaching responsibilities in a 1:1 fashion. The purpose of this project is to report an innovative approach to covering teaching hours during FMLA leave. Method: To provide FMLA coverage, a junior faculty member adopted a 2.5 credit therapeutics course (30 contact hours) in a modified-block, 3-year accelerated PharmD curriculum. In advance of the leave, the other faculty member produced audio recordings for four topics. These recordings used a traditional lecture style with a combined run time of 4.15 hours. For each topic, the covering faculty member developed approximately 45 minutes of coordinated in-class problem-based learning activities. Workload for the flipped activities was tracked. Student evaluations were analyzed in comparison to previous academic years. Results: Contact time for the four therapeutic topics remained consistent (420 minutes vs. 410 minutes). Anticipated teaching preparation time for the covering faculty member was reduced by 83%. As indicated by student evaluations, AY2014-15 achievement rates for course objectives were non-inferior to AY2013-14 achievement rates. In the free-text response section of the standard course evaluation, 85.8% of the class indicated the flipped classroom delivery as an activity that helped their learning in AY2014-15. Implications: Flipped classroom delivery provides students with an equivalent learning experience without a drastically increased faculty workload during a maternity leave.

Use of a Standardized Patient Encounter to Enhance Students’ Learning in a Pharmacology Course. Jordan M. Rowe, University of Arkansas for Medical Sciences; Catherine E. Renna, Rose Pernick, Joseph Warren, Drayton A. Hammond, University of Arkansas for Medical Sciences, Ashley N. Castleberry, University of Arkansas for Medical Sciences. Objectives: To assess the effectiveness of a standardized patient encounter on student learning and to evaluate student perceptions of the experience. Method: Second-year pharmacy students in the cardiology section of a pharmacology course participated in a simulated encounter using standardized participants, centered on counseling a patient with a recent myocardial infarction with a new statin prescription. Pharmacy students were evaluated using a 14-item checklist focused on important counseling points and communication skills. After the simulated encounter, students met in small groups to debrief the experience. An evaluation incorporating Likert scale responses (1 = strongly disagree, 5 = strongly agree) assessed students’ perceptions of the experience. Perceptions were evaluated using descriptive statistics (mean, standard deviation). Two investigators independently analyzed students’ reflections qualitatively. The institutional review board approved this research as exempt. Results: All students (n = 116) completed the patient encounter, debriefing, evaluation and reflection. According to student perceptions, the exercise stimulated learning (4.09, 0.97); was stressful (3.22, 1.05); was challenging (3.49, 0.89) and was useful (4.40, 0.66). All (100%) students agreed simulation should be used next year in this course. Main themes were identified from qualitative analysis, including the opportunity to practice patient counseling and application of the knowledge taught in pharmacology lectures. Implications: Students perceived the patient encounter to be useful to learning and recommended it be incorporated in future coursework. Implementation of clinical exercises mimicking actual patient encounters should be considered in basic pharmaceutical sciences courses to enhance application of foundational knowledge.

Use of a Team Active Learning Strategy for the Teaching and Learning of Pharmaceutical Calculations. Matthew Pitlick, St. Louis College of Pharmacy, Justinne Guyton, St. Louis College of Pharmacy; Jamie Pitlick, St. Louis College of Pharmacy, John M. Burke, St. Louis College of Pharmacy. Objectives: To determine if the addition of a group active learning strategy improves student performance compared to traditional teaching methods. Method: This quasi-experimental study investigated the addition of a team active learning strategy to teach pharmaceutical calculations. The study included students enrolled from fall 2012 to spring 2014 with the teaching method implemented fall 2013. Exclusion criteria included withdrawal or dropout from class, class absence from required quizzes, and repeat enrollment in the course. The primary outcome was achievement of calculations proficiency defined as ≥ 80% score on either the final examination or the average of the mid-term examinations and final examination. Results were analyzed with chi-squared. Secondary outcomes include number of students not meeting proficiency analyzed with descriptive statistics and final comprehensive exam scores analyzed by t-test. All outcomes were stratified based on student classification. Results: Of 268 students included pre-implementation, 187 (69.8%) met proficiency and of 248 students included post-implementation, 189 (76.2%) met proficiency (P = 0.113). Mean calculation mid-term exam scores were 80.1% pre-implementation vs. 80.9% post-implementation (p = 0.4237). Mean final comprehensive scores were 80.8% pre-implementation vs. 85% post-implementation (p = 0.001). No effect of student classification was observed for any outcome. Implications: The evaluation showed no statistical difference in the primary outcome. Possibly, a larger sample size is needed to detect a difference. To improve calculations proficiency, additional active learning strategies need to be evaluated.

Using ExamSoft Rubrics to Improve a Pharmacy Skills Laboratory Course. Jennifer Kirwin, Northeastern University, Margarita V. DiVall, Northeastern University. Objectives: To describe practical implementation of ExamSoft Rubrics in a Comprehensive Disease Management (CDM) pharmacy skills laboratory to capture performance-based
assessment data. **Method:** CDM Skills Lab complements our CDM course in teaching and assessing skills essential to pharmacists. ExamSoft rubrics were used in lieu of paper-based assessments to capture data on attainment of skills and programmatic CAPE outcomes. Paper rubrics were modified by the faculty coordinator and added to ExamSoft. In each lab, graders accessed posted assessments, reviewed materials, and rated performance with scores and comments. Once released, students could view their rubric and overall comments via the ExamSoft Examtaker portal. **Results:** Over 2 semesters of use, a rubric template and corresponding rubric were created for each lab activity, 7 total. These were combined and posted into 29 different assessments. Rubric items were mapped to 2013 CAPE Outcomes. Items most frequently assessed were skills related to patient-centered care, medication use process, education, and communication. Review of course assessment data to date showed average student performance on these CAPE outcomes was > 80%. For the Educator outcome, despite aggregate class average across 23 items assessed of 82%, 13 students (10%) were below passing. **Implications:** Implementation of ExamSoft rubrics in a skills lab laid the foundation for stronger programmatic assessment of outcomes. These data identify potential weaknesses in student preparation, which will lead to course revisions ensuring all students attain competency in outcomes evaluated. The software was easy to use for the coordinator and graders, reduced paper, and provided students with comprehensive performance feedback.

**Using a Community Theater as a Self-Directed Introductory Pharmacy Practice Experience (SD IPPE) Site,** Thomas Franko, Wilkes University. **Objectives:** At Wilkes University, 20 hours out of the required 300 IPPE hours are self-directed which encourages students to identify opportunities engage in community service. The goal of this study is to describe a novel setting for SD IPPE. **Method:** Theatrical performances often incorporate healthcare issues into their plots. Students were offered the opportunity to present healthcare information relative to the plot of each production at a local community theater during the theater season. Presentation topics included vaccinations, falls prevention, food poisoning, and alcoholism awareness. Students developed a poster and handout that were presented in the theater lobby prior to each production. A six-question survey was provided to students after each presentation that identified their perceived benefit to play patrons and their overall experience using a five-point Likert scale.

**Results:** There were eleven survey responses. 63% of students strongly agreed that their experience was positive and that they felt it important to complete SD IPPE hours in a venue different from a typical health fair. 54% of students agreed that they had a positive impact on the theatrical experience of the audience. 90% of students responded that they preferred completing SD IPPE hours in non-traditional settings.

**Implications:** Completing SD IPPE in a theater is a novel and innovative concept. Data suggest that students prefer presenting information in non-traditional settings. Students felt their work enhanced the theatrical experience of patrons. Results demonstrate that the theater is a viable setting for future presentations that benefit both students and the public.

**Utilizing Learner-Generated Content in an Emergency Preparedness Elective,** Jeremy R. Fox, Shenandoah University. **Objectives:** Pharmacists are expected to utilize knowledge, evidence-based medicine, problem-solving skills and critical thinking to provide care and educate patients and other healthcare providers. Active learning strategies, such as TBL, may facilitate student ability in some but not all of these areas. Learner-generated content is an immersive strategy that expands on current active learning formats by providing structure for students to become content experts by requiring them to educate their peers.

**Method:** Students were given several in-class activities designed to establish the skills necessary to acquire, evaluate, and disseminate information within a limited amount of time to imitate emergency situations. Students then selected topics they researched independently, created lecture materials, and presented to the class. The facilitator was responsible for challenging the students during discussions and ensuring the student educators presented accurate and complete information. Course evaluations, student essays, and faculty perceptions about the use of this course format will be presented. **Results:** This course has been offered for three semesters with a total of 59 student participants. Course evaluations resulted in a median and mode of 5 on a 5-point Likert scale in all categories. Student essays and comments in course evaluations are overwhelmingly positive and indicate a high level of learning and satisfaction. **Implications:** This teaching format has the potential to meet several requirements of the current accreditation standards. Students learn how to be self-directed and motivated to learn new information, structure and organize material, and obtain experience teaching their peers and leading discussions as content experts.

**Validation of the SPICE-R Instrument among a Diverse Interprofessional Cohort,** Michael J. Peeters, The University of Toledo, Yixing Chen, The University of Toledo. **Objectives:** Recently, evidence for construct validity and reliability of the ‘Student Perceptions of Interprofessional Clinical Education-Revised’ (SPICE-R) instrument has emerged. With this limited evidence, we sought to investigate whether the SPICE-R was able to adequately measure our interprofessional education experience. **Method:** In a Fall-semester course (2014) with eight health professions (medicine, nursing, pharmacy, physical therapy, occupational therapy, respiratory therapy, speech-language pathology, and physician assistants), the SPICE-R was administered at the beginning of the course, and again after it ended. Students’ program and gender were also collected. The data was analyzed for simple pre/post change in total score (Wilcoxon signed rank), while a multiple regression included their program and gender. A further Rasch analysis was performed to further characterize the SPICE-R’s construction.

**Results:** From 8 professions, 550 participants took the first SPICE-R; 180 students completed the SPICE-R after the course finished. On Rasch analysis the 5-point rating scale did not function, while a 4-point scale appeared to. Overall, the SPICE-R (pre & post) was reliable (0.83&0.87, Cronbach’s alpha). However there was no gain over time (pre-survey mean = 32.4, SD = 4.4; post-survey mean = 31.8, SD = 4.6; p = 0.104 Paired t-test, p = 0.013 Wilcoxon Signed Rank). However, on multiple regression, the change was significant (p<0.001), gender (p<0.001), while profession program was not (p = 0.504).

**Implications:** A 4-point rating scale may better allow this SPICE-R instrument to function. This analysis was limited from response rate. While reliable, positive responsiveness of the SPICE-R was seen in this diverse cohort. No profession program was significantly different from others, however males did report poorer perceptions than females.

**Walking in Their Shoes: Poverty Simulation Exercise’s Impact on Pharmacy Student Attitudes toward Poverty,** Cheryl L. Clarke, Drake University, Renee Sedlacek, Drake University, Susan B. Watson, Drake University, Brittany Domagalski, Drake University. **Objectives:** To examine the impact of the Missouri Association for Community Action Poverty Simulation on pharmacy student attitudes toward poverty as measured by the 21-item Attitude toward Poverty (ATP) scale and compare to previous findings with nursing students. **Method:** The College collaborated with the University community engagement office to provide the 3-hour poverty simulation experience to second-year pharmacy students. Students were randomly assigned to mock family units with various life circumstances. The families simulated typical life...
activities during 4 periods designated as weeks. Volunteers served as the community organizations where the families interacted to meet needs and obligations. Students completed a survey of the ATP scale prior to and following participation in the simulation. **Results:** Changes in ATP scale responses were evaluated to detect changes in attitudes toward poverty. Statistically significant improvements in attitude were noted in 15 of 21 individual items as opposed to 4 items in a previous study of nursing students. The 21 items describe 3 domains (personal deficiency, stigma, structure) with an overall score calculated for each domain. Improvement in the stigma domain was significant for both nursing and pharmacy students while the structure domain was significant only for pharmacy students. The personal deficiency domain was significant for neither group. **Implications:** Poverty is a social determinant of health that impacts access to quality care. These findings suggest this poverty simulation exercise positively altered pharmacy student attitudes toward poverty, contributing to achievement of the 2013 CAPE outcome subdomain of cultural sensitivity or inclusion.

**What Mental Health Resources are Available to Pharmacy Students at American Institutions?** Frances Shuk Kwan Fu, Northeast Ohio Medical University, Sara E. Dugan, Northeast Ohio Medical University. **Objectives:** The purpose of this study is to evaluate the availability and the types of resources offered at American colleges of pharmacy. **Method:** Colleges of pharmacy were identified from the ACPE website. Public domain webpages of each college of pharmacy were reviewed and data categorized - What mental health services are available - Where is this information listed and promoted **Results:** Webpages reviewed for 130 colleges of pharmacy. 115/130 (88%) had documented mental health resources. None of the services mention or focus specifically on the pharmacy student population. The most common mental health resources available included: - Group and individual counseling services 113/130 (87%) - Off campus referral 29/130 (22%) - Suicide and emergency hotlines 60/130 (46%) - Online preventative reading 61/130 (47%) **Implications:** While most (88%) colleges of pharmacy offer mental health services there is variability in the services offered, where the information is listed and what information is readily available. This suggests that additional information such as student and administrator perspectives on the perception of the mental health resources would be helpful to further define what mental health resources are most valuable to pharmacy students in the United States.

**“Safedance” Pharmacy Film Festival: Flipping the Classroom with the National Patient Safety Goals and Joint Commission.** Sarah J. Steinhardt, University of South Florida, John Clark, University of South Florida, William N. Kelly, University of South Florida, Mei-Jen Ho, University of South Florida, Nazach Rodriguez-Snapp, University of South Florida, Jose L. Barboza, University of South Florida, John Donnelly, University of South Florida, Angela M. Hill, University of South Florida. **Objectives:** The purpose of the film festival is to engage students in an active learning project to teach the National Patient Safety Goals (NPSGs), Universal Protocol, and Joint Commission topics through application of teaching skills, communication, group cooperation, and creativity. The film festival format may be adapted to other courses within a college of pharmacy curriculum.

**Theoretical Models**

**A Faculty Led Year-Round Preparatory Approach for Fourth Year Pharmacy Students Applying for Postgraduate Education.** Christopher J. Gillard, Xavier University of Louisiana, O. Onor, Xavier University of Louisiana, Kisha O. Gant, Xavier University of Louisiana. **Objectives:** The purpose of this initiative is to enhance pharmacy student preparation for the postgraduate education application process. **Method:** A residency advisory group consisting of three clinical faculty members oversees the awareness and preparation for postgraduate training for students in the College of Pharmacy. Students with an interest in postgraduate training are identified at the end of their third year of pharmacy school after participating in a pharmacy career paths seminar and completing a residency interest survey. Interested students are then scheduled to have at least two clinical experiential experiences before the annual ASHP Midyear Meeting to gain clinical experience as a competitive advantage before meeting with residency programs. Faculty workshops are held throughout the year to discuss best practices on developing a curriculum vitae and letter of intent, how to apply using PhORCAS, preparing for residency showcases, onsite interviews, submitting to the ASHP Match, and the scramble process. Each student is assigned a faculty mentor who assists with application development, providing guidance on residency program selection, and conducting individual mock interviews. **Results:** Students provided positive feedback about their experience with this preparation initiative and have demonstrated increased knowledge of postgraduate training and confidence in their ability to complete applications and interview. **Implications:** The competition for postgraduate training continues to increase and approaches to prepare students and strategically position them for success as they pursue postgraduate training is critical.

**A Panel Discussion of Overlapping Guidelines in a Hyperlipidemia Module for Pharmacy Students.** Laura H. Waite, University of the Sciences, Alice Lim, University of the Sciences, Diane Hadley, University of the Sciences. **Objectives:** To describe a novel faculty panel discussion model used to educate pharmacy students on previous and updated dyslipidemia treatment guidelines. **Method:** Student debates to illustrate clinical controversies have been successful in previous reports, but they are impractical for large classrooms with limited time. An innovative faculty panel discussion was developed to help students learn and apply differing hyperlipidemia guidelines. P2 pharmacy students enrolled in the pharmacotherapeutics sequence observed a panel discussion involving five patient cases between faculty members representing different clinical opinions (previous versus updated guidelines) in...
An Area of Concentration in Global Health: Program Development and Outcomes. Sharon E. Connor, University of Pittsburgh, Lauren J. Jonkman, University of Pittsburgh. Objectives: Described is an educational program designed to provide students with an opportunity to focus their training to develop the knowledge, skills, and attitudes of a global health pharmacist. The Area of Concentration in Global Health (ARCO-GH) provides a structure to personalize their pharmacy experiences to address issues related to medication access in limited resource settings for vulnerable populations locally and globally. Method: Competencies in global health were adapted from the Association of Schools of Public Health, including seven domains. Students in the ARCO-GH are required to complete 6 credits of electives, 2 APPE rotations, and a publishable research project addressing skills in one or more of the competency domains. After bi-annual self-evaluation, students identify their deficiencies and work with faculty to find opportunities to enhance their skills. Results: Since its inception, nineteen students have enrolled in the ARCO. Two have graduated; both pursuing advanced training with a strong focus in underserved care. Students report valuing the on-one mentoring, research experience, and opportunities to specialize as a student. Research projects have included qualitative and quantitative research as well as quality improvement projects at local underserved locations (free clinic, community health center, drug and alcohol treatment program), and international partners (Malawi, Honduras, Philippines). Implications: Pharmacy schools have an obligation to train students to effectively care for vulnerable populations. The ARCO-GH gives students the opportunity to gain hands-on skills to address health disparities. This program serves as a model for training students to care for underserved populations locally and globally.

Applying an Adapted Scoring Matrix to Evaluate Diabetes Topics across a Doctor of Pharmacy Didactic Curriculum. Andrew S. Bzowyckyj, University of Missouri-Kansas City, Cameron C. Lindsey, University of Missouri-Kansas City, Amanda M. Stahneke, University of Missouri-Kansas City, Kelly A. Cochran, University of Missouri-Kansas City, Lynn Kassel, University of Missouri-Kansas City. Objectives: To describe a phase in a multi-step curricular mapping process guiding curricular improvements. To assess the importance of a broad range of diabetes-related topics and the level of detail to which each should be delivered. Method: A faculty workgroup compiled a list of 415 diabetes-related topics with guidance from various scientific and practice faculty. A scoring matrix was adapted from the objective structured clinical examination (OSCE) Validation Matrix. The criticality construct was maintained. The relevancy construct was adapted to assess the level of detail that each topic should be taught and was scored based on placement within Bloom’s Taxonomy. To minimize bias, the scoring matrix was utilized by two groups of faculty (independent of workgroup members) that encompassed scientific, inpatient and outpatient backgrounds. Faculty were trained to use the scoring matrix to improve consistent application of the tool. Each group discussed the criticality and depth of each topic and arrived at an overall score ranging from 0.1 (low level of criticality/detail) to 0.9 (high level of criticality/detail). Results: Of the 415 topics coded, 31 (7%), 135 (33%), 103 (25%), 57 (14%) and 89 (21%) topics scored at 0.9, 0.7, 0.5, 0.3 and 0.1, respectively. Implications: The workgroup's next phase of the project will be to assess a cross-section of the school's didactic, required curriculum using the topics previously noted. The amount of time for each topic and the assessment method(s) will be collected. Applying these two-phases, an evidence-based determination of strengths and gaps within the curriculum will inform changes.

Combining Clinical Nutrition and Critical Care Electives through Simulation-Based Learning: Model for Intradisciplinary Learning. Gwendolyn Wantuch, University of South Florida, Kamila A. Dell, University of South Florida. Objectives: Promote mastery of clinical assessment skills through high-fidelity intradisciplinary simulation learning experiences. Method: Two independent elective courses, clinical nutrition support and critical care, were integrated through one high-fidelity simulation designed to replicate in-patient clinical scenarios. Observational and survey results suggested student confidence increased in patient assessment as a result of the simulation. The courses were redesigned to incorporate four high-fidelity ICU patient simulations followed by debrief sessions. The simulations were designed to progressively increase in difficulty and provide opportunities for reinforcement. Peer teaching was incorporated into the simulations by including APPE students role-playing health care professionals. Students worked in groups to physically assess the patient, review a complete medical chart, interact verbally with healthcare professionals, and develop therapeutic care plans representative of each specialty area. Each simulation reinforced opportunities for pharmacy interventions including MAR discrepancies, medication administration appropriateness, drug-interactions, and drip-rate calculations. Students were evaluated on professionalism and the ability to communicate appropriate interventions after each simulation. Results: Observational, survey, and assessment results demonstrated students were more confident in identifying therapeutic problems, errors, and omissions following the simulations. Implications: The interdisciplin ary step-wise approach to patient assessment simulation serves as a model for future pharmacy education. This process will increase the student’s ability to identify pharmacy related interventions and understand the connection with intra- and interdisciplinary specialties. This increased ability is expected to allow for improved performance on APPE rotations and in pharmacy practice.

Design and Implementation of an Emphasis in Independent Pharmacy Ownership Within a Pharmacy Curriculum. Cortney M. Mospan, East Tennessee State University, Katelyn M. Alexander, East Tennessee State University. Objectives: To develop an innovative curricular experience that will equip students with the knowledge and skills necessary for practice as a clinical community pharmacist and future independent pharmacy owners. Method: Community-focused faculty developed a four-part program, including didactic, experiential, project, and service components. The didactic component included successful completion of the American Pharmacists Association (APhA) Pharmacy-Based Immunization Delivery and Delivering Medication Therapy Management Services certificate training.
Improvement. Developing a Curricular Mapping Process for Continuous Quality Improvement. Anne Marie Liles, The University of Mississippi, Salisa C. Westrick, Auburn University, Nathan A. Pinner, Auburn University, Karen F. Marlowe, Auburn University. Objectives: Curriculum mapping serves several purposes including evaluation of a current curriculum or development of a new curriculum. The 2016 Accreditation Council for Pharmacy Education Standards and Guidance for Standards require documentation of the breadth and depth of curricular content which may be done through mapping. The intent of this project is to describe Harrison School of Pharmacy’s (HSOP) implementation of a mapping processes. Method: Rubicon Atlas was used as mapping software. A mapping committee developed the organization of the mapping template. A template includes Program Outcomes/Academic Standards, Learning Objectives, Content (Drugs, Disease, Skills/Concepts), Assessment, Teaching Methodologies, and Resources. This template was completed for each unit and each course consists of multiple units. A core group of faculty were trained on the process with the intention of a “train-the-trainer” approach and the mapping manual was created to increase the consistency across courses. This group also served as reviewers of the course maps. Course maps will be archived and updated annually. Results: About sixty percent of the curriculum is mapped within the first 6 months of launching. Some of the information that can be retrieved includes the percentage of ACPE standards, NAPLEX criteria, and the school’s ability-based outcomes are being addressed and/or assessed for individual courses and the curriculum as a whole. Implications: As HSOP begins curricular revision the curriculum map will allow for assessment of necessary changes. In addition, as changes are implemented, the curriculum map can be updated allowing for assessment and continuous improvement.

Implementation of a Triple Aim Focused Interprofessional Education Curriculum at an Academic Health Center. Kathryn K. Neill, University of Arkansas for Medical Sciences, Kelly Betts, University of Arkansas for Medical Sciences, Cathrin Carrithers, University of Arkansas for Medical Sciences, Seth D. Heldenbrand, University of Arkansas for Medical Sciences, Tonya Cook, University of Arkansas for Medical Sciences, Lori Dean, University of Arkansas for Medical Sciences, William Buron, University of Arkansas for Medical Sciences, James Bellamy, University of Arkansas for Medical Sciences, Lori A. Fischbach, University of Arkansas for Medical Sciences, Laura L. Sisterhen, University of Arkansas for Medical Sciences, Sara Tariq, University of Arkansas for Medical Sciences, Lee Wilbur, University of Arkansas for Medical Sciences. Objectives: To create a Triple Aim culture which incorporates interprofessional education (IPE) competencies to improve patient care, improve population health and reduce cost of care. To design an IPE curriculum that overcomes challenges of varying schedules, faculty development needs, and accreditation standards using Triple Aim goals which apply to all academic units to serve as a unifying framework. Method: A 12 member Steering Committee of representatives from all 6 UAMS colleges worked interprofessionally to design a longitudinal curriculum incorporating IPE through learning and practice activities grounded in Triple Aim tracks. The proposed curriculum was presented to each college’s curriculum committee for approval as a campus-wide graduation requirement beginning Fall 2015 and piloted in Spring 2015. Results: A three-phase Triple Aim IPE curriculum (Exposure, Immersion, and Competence) was designed and aligned with competency development through novice, intermediate, and advanced levels in each professional program. Elements incorporate the Triple Aim, IPE Domains, Patient and Family Centered Care, Health Literacy, Social Determinants of Health, and Health Economics including collaboration from community partners. Students complete a cycle of concept learner, practitioner, and junior educator. Implications: The Triple Aim curriculum minimizes the need for schedule collaboration, provides faculty development opportunities for teaching and practice-based responsibilities, and allows colleges to individualize curriculum to meet accreditation standards. Faculty development is designed and provided interprofessionally by faculty equipped to assist with the Triple Aim curriculum phases. This novel curriculum structure is broadly applicable to programs of any size and composition and will translate well with IPE requirements in ACPE Standards 2016.

Integrating Affective Domain and Audio-Video Technology: Development and Implementation of a Communication and Professionalism Course. Hoai-An Truong, West Coast University, Reza Taheri, West Coast University, Keri Hurley, West Coast University. Objectives: Describe the development and implementation of innovative teaching-learning and assessment strategies by integrating affective domain and audio-video technology in a required course. Method: Affective domain elements, specifically communication, professionalism and professional development, and audio-video technology were incorporated into the development and implementation of course learning outcomes and delivery. Teaching-learning and assessment strategies included video-recorded role-plays and oral exams, video-production project on practice settings, patient interview assignment on tenets of professionalism, one-minute elevator speech, and continuing professional development activity. Assessment tools included two rubrics to evaluate video clips and role-plays to address non-adherence during patient counseling. Video-clip rubric criteria included innovation, content and quality, collaboration, and appropriateness of communication. Role-play rubric included three prime questions, teach-back method, addressing non-adherence, communication and professionalism skills. Results: Students were video-recorded in five role-plays and two oral exams to demonstrate patient counseling skills using three prime questions with focus on communication barriers, non-adherence issues, sensitive topics, and collaboration with physicians. Faculty, peer and self-evaluations were provided multiple times for improvements. Student groups produced YouTube videos on ten practice settings, interviewed patients who were benefited or harmed from professionalism tenets, delivered presentations, and submitted reflection papers. Implications: Students provided overall positive feedback on course activities and assignments.
Integration of affective domains and audio-visual technology through patient counseling role-play provided learning opportunities and feedback for students to enhance skills and abilities to become competent and empathetic. Videos on practice settings increase students’ awareness of pharmacy career opportunities.

Learning Together Working Together: A Novel Clinical Education Model to Build a Collaborative Ready Workforce. Crystal Burkhardt, The University of Kansas, Shelley Bhattacharya, University of Kansas Medical Center, Mandi Sehgal, University of Kansas Medical Center, Dory Sabata, University of Kansas Medical Center, Stephen Jernigan, University of Kansas Medical Center, Myra Hyatt, University of Kansas Medical Center, Laura Zahner, University of Kansas Medical Center. Objectives: Collaborative interprofessional (IP) practice and care are essential to address the complex health care needs of geriatric patients; however, teaching this model continues to be a major gap in every health professionals’ education. Method: Our IP faculty created the Geriatric Interprofessional Teaching Clinic (GITC) and the Learning Together, Working Together (LTWT) curricula to introduce learners to collaborative IP concepts. The GITC/LTWT have been designed for all learners to understand how to effectively work together to efficiently meet the needs of their older adult patients. Learners were anonymously assessed electronically before and after their GITC/LTWT experience using the Interprofessional Collaborative Competencies Attainment Survey (ICCAS) and the Attitudes Toward Interprofessional Health Care Teams (ATIHCT) survey. Additionally, qualitative learner feedback was collected. Data collection continues for the GITC/LTWT experiences. Results: To date, seventy-four learners have participated in the GITC/LTWT. Survey completion rate was 39%. There was a statistically significant improvement (p < 0.05) in the “Patient Centered” and “Team Functioning” subscales on the ICCAS. Learners demonstrated a positive attitude about health care teams as assessed on the baseline ATIHCT survey; no change was noted after the GITC/LTWT experience. Learners described growth in their interprofessional development with GITC/LTWT exposure. Implications: With this intentional IP Geriatric experience, healthcare professional learners have gained confidence in their abilities to collaboratively practice in an IP manner. Based on our survey data to date, we have learned that the GITC/LTWT model is an effective means for developing learner competence in IP practice.

Pharmacist Delivery of Cognitive Behavioral Therapy for Insomnia. Alfred J. Remillard, University of Saskatchewan. Objectives: To investigate the feasibility of pharmacist-delivered cognitive behavioral interventions for insomnia (CBT-i) and develop a CBTi delivery training manual and workshop for pharmacists. Method: Literature search (PubMed, IPA, Google) – efficacy and accessibility of CBTi; methods of delivering CBTi; reports of pharmacist provision of CBTi. Based on this information, a training manual for pharmacists with an accompanying workbook for patients was drafted. Content included sleep restriction, stimulus control therapy, sleep hygiene, cognitive restructuring and relaxation techniques. A focus group comprised of six practicing community pharmacist evaluated the manual, the patient workbook, and the concept of pharmacist provision of CBTi. Results: CBTi is a safe effective treatment option for insomnia but there is currently a shortage of healthcare practitioners offering CBTi. Focus group participants had a number of suggestions for revision of the manuals. Overall they were very enthusiastic about both the manuals and the prospect of adding CBTi to their practices. The next phase will be to train community pharmacists and to assess the impact of CBT-i to patient care. Implications: Lack of accessibility to CBTi was identified as a current patient care problem. Community pharmacist trained in CBTi will provide greater access to a safe and effective alternative for sleep therapy beyond just hypnotics.

Progressive, Proactive Professional Development with PROfolios. Cora L. Housley, University of Arkansas for Medical Sciences, Brett Bailey, University of Arkansas for Medical Sciences, Eric Hamilton, University of Arkansas for Medical Sciences, Martha H. Carle, University of Arkansas for Medical Sciences, Cindy D. Stowe, Sullivan University, Ashley N. Castelberry, University of Arkansas for Medical Sciences, Kathryn K. Neill, University of Arkansas for Medical Sciences. Objectives: To describe the design of a longitudinal self-assessment and reflection process to assess students’ perception of competency development throughout the curriculum. Method: A series of longitudinal self-assessments and reflections were implemented at five strategic points throughout the professional program to assess students’ self-perception of competency development (P1 Spring, P2 Fall, P3 Fall, P3 Spring (Pre-APPE), and P4 Spring (Post-APPE). Professional Reflective Overview portfolio (PROfolio) assignments incorporate exposures to didactic and experiential coursework as well as extracurricular activities. Reflections are submitted via an online platform. Reflections include self-evaluation of level of ability (Novice, Practicing, Achieved) in three UAMS competency domains (Patient Care; Dispensing and Resource Management; Health Improvement, Wellness, and Disease Prevention). Students also reflect on level of exposure (Introductory, Observed, Performed) and level of ability (Novice, Practicing, Achieved) in eleven ACPE Pre-APPE competencies. Reflective prompts on professional strengths, interests, and action steps for curriculum and career planning are incorporated longitudinally. Results: Four cohorts of students (n = 468) have completed reflections. PROfolio assignments enhance students’ integration of didactic and experiential learning. Assessments underscore a student-centered approach to monitor progress and help mentors provide more specific feedback for curriculum and career advising. Implications: PROfolio reflections allow students to reflect on progress toward APPE readiness and practice-ready competence. Because reflections incorporate didactic, experiential, and extracurricular exposures, these assignments will translate well with co-curricular assessments required in the 2016 ACPE Standards. Reflections also inform continuous quality improvement in the core curriculum. Qualitative analysis of student reflections is available in a companion poster.

Use of a Student Focus Group as an Assessment Strategy in a Pharmaco-therapeutics Course Series. Anna K. Morin, MCPHS University–Worcester/Manchester, Cheryl Durand, MCPHS University–Worcester/Manchester, Abir Kanaan, MCPHS University–Worcester/Manchester, Kristine C. Willett, MCPHS University–Boston, Courtney I. Jarvis, MCPHS University–Worcester/Manchester, Mimi Mukherjee, MCPHS University–Worcester/Manchester, Dinesh Yogaratnam, MCPHS University–Worcester/Manchester, Paul P. Belliveau, MCPHS University–Worcester/Manchester, Jennifer L. Donovan, MCPHS University–Worcester/Manchester. Objectives: The School of Pharmacy–Worcester/Manchester (SOP-W/M) conducted a student focus group to obtain feedback regarding the pedagogical and assessment methods used in the pharmaco-therapeutics course series. Method: Fifty-eight students, representing 20% of students on advanced rotations, were randomly selected to participate. The Pharmaco-therapeutics Task Force developed open-ended questions from course evaluations that addressed student and faculty concerns. Focus group rules were established prior to the start of the session. Students were randomly assigned to small groups and asked to discuss the teaching, learning and assessment methods used in the course. Students then provided feedback in a large group format while faculty moderators facilitated and kept records of discussions. Results: A descriptive report summarizing the discussion was circulated to all students who participated for feedback. The finalized report was shared with SOP-W/M administration, faculty, staff, and the class.
Objectives: To use the Cognitive Apprenticeship Model and blended learning to design a model for patient care skills development in a second year Skills Lab course. Method: After one year of offering the Skills Lab course a number of instructional design opportunities were identified. These included the need to deconstruct and model patient care skill development; a framework for patient communication that would meet the needs of expanding scopes of practice; and, an instructional model that made best use of scarce resources. Principles of blended learning and the Cognitive Apprenticeship Model were used to inform the learning design for pharmacy practice skills including OTC, new prescription and monitoring consultations, and therapy evaluation. Results: The learning design includes modulating with online videos, coaching by lab demonstrators, checklist tools for instructional scaffolding, lab activities for articulation of clinical reasoning processes and an online self-assessment journal for reflection. A modified Calgary-Cambridge guide was adopted as the overall model for developing communication skills. The blended instructional design model for each skill included online pre-work containing audio presentations, videos modelling skills, and quizzes; an in-class workshop where students in groups role play patient scenarios, with peer and lab demonstrator feedback; and in lab activities for further application and formative feedback. Overall student reaction was positive for this learning approach. Implications: The pedagogical concepts and methods used for developing patient care skills in this course may be useful for other pharmacy programs.

A Process for Validating a Professional Engagement Instrument Using Both Quantitative and Qualitative Reviewer Input. Benjamin D. Aronson, University of Minnesota, Kristin K. Janke, University of Minnesota. Objectives: This study aimed to use both quantitative and qualitative feedback from experts to enhance the content validity of an instrument measuring professional engagement in student pharmacists. Method: Items were developed based upon qualitative work with student pharmacists, and other measures and definitions of employee and student engagement. Five subject matter experts were given a conceptual definition and the 34 survey items, and asked to provide: 1) quantitative ratings of item relevance to calculate the item level Content Validity Index (CVI), and 2) qualitative feedback through both an electronic survey and telephone focus group. Both the quantitative and qualitative inputs were used in tandem to refine the instrument. Results: Fifteen of the 34 items had CVI scores below the recommended cutoff of 0.78, and thus were considered for revision or deletion. Qualitative feedback identified issues with potential items and resulted in potential solutions to identified issues. Feedback also suggested the need to appropriately cognitively prime students, and ensuring the assessment focused on the state of mind of professional engagement. The combined data resulted in 6 changes to items, 2 additional items, and removal of 1 item. Implications: The quantitative and qualitative feedback provided complementary information with the quantitative review identifying problematic items, and the qualitative review exploring the reasons for problems and possible solutions. This work provides a framework for using multiple forms of input in instrument validation by subject matter experts. The utilization of both forms of data from expert review enhanced the content validity of this instrument.

A Systematic Key Word Review of LGBT Terminology in Pharmacy Literature. Victoryn S. Williams, Western New England University, Maya Leiva, Western New England University, Eric C. Nemec, Western New England University. Objectives: To investigate the extent to which the LGBT Community is included in pharmacy literature and therefore indicative of the potential that they are addressed in pharmacy education programs. Method: A systematic keyword search of the General Pharmacy Practice journals listed in the 2013 CAPE Core List of Journals for Libraries that Serve Schools and Colleges of Pharmacy was conducted to assess the frequency and timing of LGBT-related articles in pharmacy literature. Twenty-three keywords were identified in previously published literature. Searches were limited from earliest electronic availability to January 2015 in order to identify the first and latest LGBT-related publication. Results: The search yielded only 28 articles and a total of 54 keyword hits published within 6 of the 10 General Pharmacy Practice journals. The earliest publication date of LGBT literature was 1982 with the latest date being 2014. Furthermore, 87% (n = 47) of the keyword hits were published after the year 2000. Of the published keywords, 15 were included in a title and 39 were published in an abstract. Implications: The 2013 CAPE Outcomes indicate that pharmacy graduates should be culturally sensitive.
An Applied Secondary Database Analysis Elective Course for Pharmacy Students: A Descriptive and Assessment Analysis.

Alexandra Perez, Nova Southeastern University, Silvia Rabionet, Nova Southeastern University, Barry A. Bleidt, Nova Southeastern University. Objectives: To describe deliverable quality and research dissemination outcomes of a 2-credit elective course that introduces students to secondary database analysis in clinical pharmacy. Student confidence levels in research tasks will also be described. Method: Within one semester, P3-students learned the skills to complete a basic research proposal and IRB application, create and analyze a National Health and Nutrition Examination Survey (NHANES) sample dataset using SPSS, Inc., and developed an abstract and poster presentation. Studies were completed in groups (2-4 students/group). Two semester student cohorts (Winter-2013 and 2014) were followed. At the end of the 2014-semester, an IRB-approved survey was administered to assess levels of confidence in doing research-related activities. Results: At the end of their course, six groups (20 students) successfully completed and presented high quality studies related to racial/ethnic disparities. Five groups delivered a poster presentation at the ASHP Midyear meeting. All or a majority of the 2014 semester students (n = 12) strongly agreed/agreed to feeling confident about navigating the NHANES database, using SPSS software, conducting basic statistics, considering a future career in research and now having a competitive advantage if pursuing a residency. Half or less of respondents felt very confident in writing a basic research proposal and inclusion criteria, filling out an IRB application and conducting data manipulation. Implications: All student groups completed their studies within a semester and disseminated their results in local and national forums. These research-related skills are transferable to academic and clinical settings, and post-graduate training. Future courses must reinforce learning in skills where students feel less confident.

An Educational Strategy to Enhance the Intercultural Competence and Communication of Pharmacy Students. Erica Rogers, Kelsey L. Turcotte, Union University, Sean R. King, Union University. Objectives: The purpose of this investigation was to evaluate the impact of an educational intervention, based on the social cognitive theory (SCT), on enhancing the intercultural communication competence, situational perception, outcome expectations, intercultural communication self-efficacy and behavioral capability of third-year pharmacy students. Method: This SCT-based intervention employed a pretest-posttest control group design. The intervention was administered to third-year pharmacy students (n = 46) as part of a required Patient Assessment course. Pre and post-test data were collected one week prior to and one week following the delivery of the SCT-based intervention to the experimental group. First-year pharmacy students (n = 50) served as the control group. Results: The two groups did not differ in the distribution of demographic or SCT variables at pre-test. Analysis of covariance (ANCOVA) revealed significant differences between the groups on intercultural communication competence (p = 0.020) and intercultural communication self-efficacy (p = 0.011). Significant differences were not found to exist between the groups on the SCT constructs situational perception, outcome expectations or behavioral capability. Implications: The findings of this investigation provide evidence that perceived intercultural communication competence and intercultural communication self-efficacy are modifiable among pharmacy students through an educational intervention. These results may assist other schools of pharmacy in their efforts to incorporate cultural competence into their curricula. The intervention may be modified and implemented in advanced pharmacy practice experiences, residency programs and continuing education programs. The value of using a theoretical approach to focus attention on important concepts and skills to create a more efficient culturally competent learning process requires further evaluation.

An Innovative Faculty Development Workshop Using a Pharmacy Educator Peer Leader Approach. Lisa Bishop, Memorial University of Newfoundland, Marie Rocchi, University of Toronto, Harold Lopatka, Association of Faculties of Pharmacy of Canada. Objectives: The purpose of the workshop was to establish a pharmacy educator peer leader network (PEPLN) with a goal to integrate the Association of Faculties of Pharmacy’s (AFPC) “Informatics for Pharmacy Students” e-Resource into the curriculum of all pharmacy schools across Canada. Method: Modeled after Canada Health Infoway’s “clinicians in training” peer leader approach, a workshop was developed to train 10 peer leaders. A needs assessment helped inform the content of the workshop. Activities were distributed pre-workshop and a post-workshop evaluation was conducted. Canada Health Infoway provided funding for the workshop. Results: One representative from each of the 10 pharmacy schools across Canada attended a two day workshop in August 2014. The needs assessment indicated that they had little familiarity with the e-Resource or using a peer leader approach. During the workshop two motivational speakers presented, and information about the e-Resource and project was shared. Everyone agreed/strongly agreed that the workshop was relevant to their peer leader role, was engaging and effectively delivered. After the workshop, eighty percent of faculties developed projects, with a total of 24 planned student integration activities and 11 engagement activities. Prior to the workshop 160 students had accessed the e-Resource, which increased to 2600 by February 2015. Implications: A peer leader approach appears to be an innovative and effective way to implement a novel educational method. A pre-workshop needs assessment was helpful in planning the format of the workshop. A PEPLN could be explored for other pharmacy educational endeavors.

An Interactive Online SBAR Module for Interprofessional Communication to Promote Patient Safety. Nathaniel M. Rickles, Northeastern University, Mary Mayville, Northeastern University, Brenda Douglas, Northeastern University, Conner Peterson, Northeastern University, Alexandra Mullaney, Northeastern University, Susan Papazian, Northeastern University. Objectives: (1) To develop an innovative computer-based learning module (intervention) that actively engages pre-license nursing and pharmacy students in using the Situation-Background-Assessment-Recommendation (SBAR) communication technique. (2) To evaluate the comparative impact of the intervention over traditional methods on student knowledge, confidence, and attitudes towards using SBAR. Method: 106 Nursing and 145 pharmacy students in separate discipline-specific courses participated during the 2014 and early 2015 semesters. All students were asked to do a pre-reading on SBAR techniques and attend a brief lecture on SBAR. Students were asked to complete a baseline survey of knowledge, and valid/reliable confidence and attitude measures. They were then randomized to complete the intervention or receive no exposure. Intervention and control students completed a post survey of knowledge, confidence, and attitudes. Control students were then instructed to complete the intervention. Paired t-tests were used to
compare pre and post-test results within each group for knowledge, attitudes and confidence; independent sample t-tests compared pre-test and post-test for group differences before and after intervention. Results: Independent sample t-test did not show any group differences at baseline. There were statistical differences between study groups in self-assessed competence and performance of SBAR. No significant differences between groups on knowledge and attitudes. There were statistical differences within the intervention group on specific attitudes. Confidence and knowledge significantly improved within both groups. Implications: Interactive online SBAR module appears more effective on confidence items than traditional SBAR learning methods. More research needed to replicate findings with other student populations.

Analysis and Restructuring of a Management Course for a Doctor of Pharmacy Curriculum. Ashley Bowden, Ohio State University, Kristin A. Casper, The Ohio State University, Katherine A. Kelley, The Ohio State University. Objectives: Prior to a mandated university switch to semesters in 2012, the curriculum for pharmacy management was taught over two quarters. Now the course has been restructured to deliver the same content during one semester. The purpose of this study is to determine the best content and delivery methods for material in a pharmacy management course using data from a variety of inputs. Method: Following IRB approval, post-course surveys from the past two years were analyzed for student perceptions of the course. Focus groups were conducted with current students and an email survey to alumni was used to gather further input about the desired content of the course. Results: Based on feedback from the variety of inputs, three areas were prioritized for the course revision - missing content, suboptimal delivery methods, and non-content experts providing lectures. Implications: A critical evaluation of a required management course led to a revised course structure revolving around three main categories: management of people, resources, and current and future pharmacy practice environments. In addition, experts from a variety of pharmacy specialty areas were recruited to provide guest lectures, and active learning was added to demonstrate application of content to practice. Additional feedback from students, alumni and preceptors will assist with further fine-tuning. Future direction includes continued effort to ensure connections to other courses in the curriculum, providing practical examples and incorporating content from experts in a variety of pharmacy settings, and incorporating innovative teaching methods.

Assessing Professional Development (Standards4): The University of Toledo’s Experience. Varun Vaidya, The University of Toledo, Michael J. Peeters, The University of Toledo. Objectives: To assess ACPE’s PharmD Standard4, “The graduate must be able to exhibit behaviors and values that are consistent with the trust given to the profession by patients, other healthcare providers, and society.” Method: PharmD students complete an electronic professionalism portfolio every year. Students are recruited to provide guest lectures, and pharmacy practice environments. In addition, experts from a variety of pharmacy specialties were recruited to provide guest lectures, and active learning was added to demonstrate application of content to practice. Additional feedback from students, alumni and preceptors will assist with further fine-tuning. Future direction includes continued effort to ensure connections to other courses in the curriculum, providing practical examples and incorporating content from experts in a variety of pharmacy settings, and incorporating innovative teaching methods.

achievement goal orientation is strongly related to change, collaboration, common purpose and congruence areas of socially responsible of leadership; whereas, the performance-avoidance area of achievement goal orientation is moderately related to consciousness of self and controversy with civility area of socially responsible of leadership. Neither age nor gender made a difference in the strength of these relationships. Implications: Multiple aspects of this study can be associated with key elements of the newly approved ACPE Standard 4 (2016) regarding personal and professional development.

Colorectal Cancer Health Promotion: A Survey of Community Pharmacists’ Attitudes and Perceived Barriers. Regina R. Washington, South College, Mark B. Dignan, University of Kentucky Markey Cancer Center. Objectives: To explore the attitudes toward the involvement in colorectal cancer health promotion activities and to assess their perceived barriers for including colorectal cancer health promotion activities in their daily practices. Method: The study objectives were addressed in a 35-item, cross-sectional survey administered by student pharmacists to a sample of community pharmacists practicing in East Tennessee community pharmacies, that serve as preceptors to the South College School of Pharmacy. The survey included quantitative and qualitative methods to assess the community pharmacist’s attitudes regarding their role in colorectal cancer health promotion and perceived barriers to implementation within a community pharmacy. Results: A total of 45 out of 65 pharmacists completed the survey, resulting in a response rate of 69%. Approximately, 70% of the respondents agreed that pharmacists have a responsibility to counsel patients about fecal occult blood tests (FOBT) and 75% reported that they have a responsibility to counsel about colonoscopy. However, approximately only 4% of surveyed pharmacists reported proactively educating patients on colorectal cancer screening. Pharmacists perceived several barriers for integrating colorectal cancer health promotion into their daily practice included a lack of patient interest (36%) and lack of time (45%). Implications: The results of this study show that although pharmacists take ownership of the responsibility to counsel patients on colorectal cancer screening, they have yet to incorporate colorectal cancer health promotion into their practice.

Community Pharmacists’ Knowledge of the Use and Risks of Oral Contraceptives. Mohamed E. Amin, Beirut Arab University. Objectives: This study examines Egyptian pharmacists’ knowledge of pharmacotherapeutic aspects of Oral Contraceptives (OCs) as an indication of likely knowledge gaps shared by US pharmacists. Method: A cross-sectional, self-administered, survey was administered to a random sample of community pharmacists in Alexandria, Egypt. Five multiple choice questions likely to arise when counseling women on OCs were constructed after consulting the World Health Organization’s handbook on family planning and conducting interviews with pharmacists. Questions covered compatibility with breastfeeding, precautions, health risks and managing missed pills of OCs. Content analysis was used to analyze answers to a question concerning specific OC topics of interest. Results: Of the 181 approached pharmacists, 92% participated and provided usable responses. Twenty one pharmacists (13%) did not know the correct answer to any question, 122 (73%) answered one-two correctly, 23 (14%) answered three-four correctly. No pharmacist answered all five questions correctly. Aggregate scores were not associated with pharmacists’ number of working hours, age, gender, marital status or pharmacy degree. In terms of the learning method of preference, the percentage values for the answer categories were: attending a workshop (4%), online course (18%), publications distributed to pharmacy (44%), other methods (1%) and more than one method (23%). Ten percent were not interested in learning about OCs. Pharmacists offered suggestions for specific OC topics of interest. Implications: It is important for pharmacy schools to consider how OCs can be best addressed in their curricula. Different learning strategies should be used to assist practicing pharmacists interested in learning about OCs.

Conflict Resolution Style Profiles Before and After Completing a Leadership Degree Option Program. Michael J. Smith, The University of Oklahoma, Jane E. Wilson, The University of Oklahoma, David L. George, The University of Oklahoma. Objectives: Describe conflict resolution styles among pharmacy students before and after completing a leadership degree option program (LDO). Method: Three cohorts of pharmacy students ([n = 7, class of 2013], [n = 14, class of 2014], [n = 17, class of 2015]) who completed the 3-year long LDO were followed. The Thomas-Kilmann Conflict Mode Instrument (TKI) was administered upon entering the LDO in the P2 year. Conflict resolution was covered during various points throughout the LDO. The TKI was re-administered at the end of the LDO in the P4 year. Data from the cohorts were collated. Descriptive analyses were conducted to report resolution style profiles over time. Results: Overall 29 of 38 (76.3%) students had a different resolution style profile either by number of modes or use of particular modes at high (>75% use) or low (<25% use) frequency. Among high frequency users, 5 of 9 decreased use of competing, 1 of 3 decreased use of collaborating, 3 of 4 decreased use of compromising, 8 of 18 decreased use of avoiding, and 10 of 20 decreased use of accommodating to <75% use. Among low frequency users, 6 of 8 increased use of competing, 11 of 16 increased use of collaborating, 6 of 12 increased use of compromising, 4 of 7 increased use of avoiding, and 5 of 6 increased use of accommodating to >25% use. Implications: A majority had a different conflict resolution style profile before and after the LDO. Identifying the appropriate mode in resolving conflict is important to leadership development.

Content and Experiential Development Regarding Vaccination Clinic Business Operations in a Pharmacy Business Entrepreneurship Elective. David L. George, The University of Oklahoma, Michael J. Smith, The University of Oklahoma, Katherine O’Neal, The University of Oklahoma, Eric J. Johnson, The University of Oklahoma. Objectives: Students that participated in campus-wide influenza clinics in Fall 2012 and 2013 reported need for content and experiences regarding vaccination clinic business operations. Modifications were implemented in the Pharmacy Business and Entrepreneurship (PBE) elective course in Fall 2014 to include, in addition to flu clinic activities, a semester-long case study and didactic lectures highlighting business operations. The project objective is to describe student perceptions regarding the course modifications. Method: This project was a cross-sectional, electronic survey design. All research was approved by the Institutional Review Board. Items in the survey were developed based on the PBE course modifications. The survey comprised of three parts: demographics, perceptions of adequacy of content and experiences, and confidence in performing business operations. The survey was administered online using Qualtrics software and available for two weeks. Results: A survey link was emailed to 28 third-year students in the elective course and 21 responded (75.0%). Most students were less than 25 years old (52.6 %). A higher proportion of students agreed content was adequate for all operations except for profitability and inventory management. Consent form development (88.9%), consent form review (88.9%), and protocol development (83.3%) had the highest proportions of agreement. A higher proportion of students agreed experiences were adequate for all operations with highest proportions for Consent form development.
(77.8%), workflow management (77.8%), and protocol development (72.2%). **Implications:** Students enrolled in a PBE elective with curricular and practical modifications received adequate content and experiences for most vaccination clinic business operations.

**Contextual Analysis of Determinants of Late Diagnosis of Hepatitis C Virus Infection in Medicare Patients.** Viktor V. Chirikov, University of Maryland, Fadia T. Shaya, University of Maryland, Charles Howell, Howard University College of Medicine. **Objectives:** Patient and county-level characteristics associated with advanced liver disease (ALD) at hepatitis C (HCV) diagnosis were examined in three Medicare cohorts: 1) elderly born before 1945; 2) disabled born 1945-1965; 3) disabled born after 1965. **Method:** We used Medicare claims (2006-2009) linked to the Area Health Resource Files. Using weighted multivariate modified Poisson regression, we modelled the association between contextual characteristics and the presence of ALD at HCV diagnosis. **Results:** We identified 1746, 3351, 592 patients with ALD prevalence of 28.0%, 23.0%, and 15.0% for birth cohorts 1, 2, 3. The prevalence of drug abuse increased among younger birth cohorts: 4.2%, 22.6%, and 35.6%, respectively. HIV co-infection [PR = 0.63, 95%CI (0.50-0.80), p = 0.001], dual Medicare/Medicaid eligibility [PR = 0.89, 95%CI (0.80-0.98), p = 0.017], residence in counties with higher median household income [PR = 0.82, 95%CI (0.71-0.95), p = 0.008], higher density of primary care providers [PR = 0.84, 95%CI (0.73-0.98), p = 0.022], and more rural health clinics [PR = 0.90 (0.81-1.01), p = 0.081] were associated with lower ALD risk. End stage renal disease [PR = 1.41, 95%CI (1.21-1.63), p = 0.001], alcohol abuse [PR = 2.57, 95%CI (2.33-2.84), p = 0.001], hepatitis B [PR = 1.32, 95%CI (1.09-1.59), p = 0.004], and Midwest residence [PR = 1.22, 95%CI (1.05-1.41), p = 0.010] were associated with higher ALD risk. Living in rural counties with high screening capacity was protective in the elderly but associated with higher ALD risk among the disabled born 1945-65. **Implications:** ALD prevalence patterns were complex and were modified by race, elderly/disability status, and the extent of health care access and screening capacity in the county of residence. These study results help inform treatment strategies for HCV in the context of coordinated models of care.

**Cost-Effectiveness Analysis of Sofosbuvir Based Combination Therapies among Patients with Hepatitis C Infection.** Priyanka Gaitonde, University of Maryland, Viktor V. Chirikov, University of Maryland, Nihal Yerlikaya, Hacettepe University, Turkey, Fadia T. Shaya, University of Maryland. **Objectives:** AASLD/IDSA have recently updated their treatment guidelines to include sofosbuvir-based therapy as recommended regimen for treatment-naive and previously treated patients with hepatitis C (HCV) genotype 1 infection. The purpose of the study was to compare the cost-effectiveness of sofosbuvir-based combination therapies vs. peg-IFN and ribavirin (PEGIFN) among treatment-naive patients and compare sofosbuvir-based combinations with and without interferon among patients previously treated with PEGIFN. **Method:** Cost per sustained viral response (SVR) was performed using a decision tree. The model contained clinical data from Phase III clinical trials for PEGIFN (T1), sofosbuvir triple therapy (T2) (NEUTRINO study), and sofosbuvir plus simprevir and/or ribavirin (T3) (COSMOS study); drug and medical costs were obtained from the National Average Drug Acquisition Costs Database (Medicaid) and literature. **Results:** Average cost among the treatment-naive was $79,749 for T1 arm (52% SVR), $101,317 for T2 (91% SVR), and $147,386 for T3 (94% SVR). Among the pre-treated, the average cost was $142,862 for T2 (72% SVR) and $187,664 for T3 (94% SVR). Among the treatment-naive, an ICER of $553 and $719 per 1%SVR gain was obtained for T2 vs. T1 and T3 vs. T1, respectively. Among the pre-treated, an ICER of $2036 per 1%SVR was obtained for T3 vs. T2. In sensitivity analysis, no other factor but %SVR impacted incremental costs per responder. **Implications:** The presented results can be used to make decisions by individual payers’ based on their willingness to pay thresholds. Future studies should examine the cost-effectiveness of new therapies by relevant HCV patient subgroups.

**Current Practices of Awarding Graduation Honors within Doctor of Pharmacy Degree Programs.** Paul A. DiPietro, Stacy L. Longo, Western New England University, Beth E. Welch, Western New England University, Daniel R. Kennedy, Western New England University, Eric C. Nemec, Western New England University. **Objectives:** To analyze the practices of awarding honors upon graduation with a Doctor of Pharmacy degree. **Method:** College and school of pharmacy websites were systematically searched for program catalogs, student handbooks, and academic bulletins; in order to identify if and how graduation honors are awarded. Programs that offer graduation honors were quantified based upon grade point average (GPA) cutoffs, honors enrollment, research project completion, faculty vote, course failure considerations, and ethics code violations. Programs were also categorized based on the type of honors awarded, such as Latin honors or “graduation with honors/distinction.” **Results:** Of the 132 Doctor of Pharmacy programs analyzed, 86% (n = 114) had accessible online resources and were included in data analysis. Of these 114 programs, 43% (n = 49) award honors upon graduation and 57% (n = 65) do not. Among the 49 programs that award honors, 30 award the Latin honors Cum, Magna Cum, and Summa Cum Laude. Of the remaining 19 programs, 18 award alternative graduation honors and 1 awards both. Within the 30 programs that award Latin honors, 28 consider GPA, 1 considers class rank, and 1 considers both. Among the 18 programs that award an alternative honor, 8 consider GPA, 3 consider class rank, and 2 consider both. Overall, there are 12 total programs with considerations other than GPA and class rank. **Implications:** Most Doctor of Pharmacy programs do not award graduation honors, while those that do generally utilize Latin honors based on GPA cutoffs. Programs looking to implement or change a graduation honors policy will find value in considering this review.

**Curriculum Mapping to Assess Content Coverage Based on a National Board Exam Blueprint.** M. Kenneth Cor, University of Alberta, Cheryl A. Sadowski, University of Alberta. **Objectives:** To identify the amount of time spent on topics listed in the test blue print for the national board exam across the Bachelor of Science in Pharmacy and Pharmaceutical Sciences program at the University of Alberta, Canada. **Method:** Mapping was conducted at the course level for all syllabi for years 1-3 in the undergraduate program. The syllabi were structured to provide content at the session level (lab, lecture, seminar). Two faculty members came to consensus on tagging each hour of face-to-face contact with students using one of 57 discreet content identifiers that were organized into four broad categories (biomedical sciences BMS, pharmaceutical sciences PS, behavioural/social/administration BSA, pharmacy practice PP). **Results:** A total of 1368 contact hours were coded for the 3 years of course work. The distribution between the four main categories was 13% BMS, 24% PS, 10% BSA, 53% PP. In order to facilitate the tagging process the list of topics was modified to eliminate or collapse 5 identifiers as well as add 9 new identifiers. Overall, major topic coverage was found to be consistent with the Canadian national averages. **Implications:** Using the data generated from the mapping process has created an ability to generate reports on different content areas across courses. We were able to compare content breakdown across our therapeutic modules to review differences in how these are being taught, and to track changes over time.
Development of Pharmacy Students’ Professionalism. Bartholomew E. Clark, Creighton University, Mark V. Siracuse, Creighton University. Objectives: Determine how professionalism dimensions of belief in professional self-regulation and belief in professional autonomy form in pharmacy students. Method: Pharmacy educators continue to be interested in developing student professionalism. The modified Hall’s Professionalism instrument previously implemented by Schack and Hepler (1979) was used to measure the professionalism attributes of belief in professional self-regulation and belief in professional autonomy in first and third year pharmacy students. Two 6-item scales measuring belief in professional self-regulation and belief in professional autonomy were administered to students at the beginning of their first semester and at the end of their sixth semester before beginning rotations. Surveys were administered over five consecutive years to first year students beginning in 2003 and to third year students beginning in 2006. Results: Surveys were completed by 411 students in both their first and sixth semesters for a response rate of 51.2%. Factor analysis revealed that scales did not form as they had in previous studies, so given that the data were normally distributed (Skewness < 1) individual item means were compared across time for first and sixth semester results using Student’s t-test. Statistically significant differences in means were seen for 11 of 12 items. Eight out of 12 items increased across time to a more professional attitude when comparing first semester to sixth semester results. Implications: Professionalism attributes appear to be stronger in third year students as compared to first year students. Pharmacy educators need to be aware of the continuing need to inculcate professionalism qualities in students.

Effectiveness of Student Facilitation in Motivational Interviewing Education. Juanita A. Draime, Rebecca M. Widder, Cedarville University, Ginger Cameron, Cedarville University, Aleda M. Chen, Cedarville University, Mark Pinkerton, Cedarville University, Douglas C. Anderson, Cedarville University. Objectives: To determine the impact of student or faculty facilitation on student (1) self-assessed attitudes, confidence, and competence in motivational interviewing (MI) skills, (2) actual competence, and (3) evaluation of facilitator performance. Method: Pharmacy students are often utilized in educational settings to facilitate or assist with courses, but little is known how this impacts outcomes. Four third-year pharmacy students underwent a two-day MI training course as well as small group facilitation training. After IRB approval, second-year pharmacy (P2) students in a Cardiology Module were randomly assigned to a student- or faculty-facilitator for practicing MI skills in small groups over 4 hours. Then, P2s participated in a simulated patient encounter where they had to utilize MI and assessed with the MITI (modified). P2s completed a pre-post, 6-point, Likert-type survey assessing their attitudes and perceived competence (4 and 12 items, agreement), confidence (18 items), and facilitator performance (12 items, post-test only, quality). Differences between student and faculty facilitators were assessed using a Mann-Whitney-U test. Results: Of the 44 P2s (100% response rate), there were no significant differences in (1) attitudes, confidence, or competence, (2) actual competence, and (3) evaluations of facilitator performance between faculty- and student-facilitated groups post-experience (p>0.05). Implications: The use of upper-level pharmacy students as small group facilitators did not impact student perceived and actual performance; they were viewed as equally favorable as faculty members. By using pharmacy students as facilitators, it can lessen faculty workload and provide an outlet for students to develop communication and facilitation skills that will be needed in future practice.

Embracing the Habit: A Prescription for Study Skills. Jaclyn R. Myers, Kimberly S. Plake, Purdue University. Objectives: The objective of this study is to assess a study skills seminar on student pharmacists’ intentions to change study habits. Method: A study skills seminar was offered to first professional year student pharmacists to provide opportunities to learn about and practice evidence-based study strategies. Seminar learning objectives addressed the effectiveness of student-reported study methods (e.g., rereading and highlighting), as well as those not commonly used by students (e.g., self-testing). Pre and post-assessments were utilized to explore students’ intentions to use the study skills described in the seminar. Wilcoxon Signed Rank tests were performed to compare pre and post data. Results: Seventy-four student pharmacists attended the study skills seminar. After the seminar, students were more likely to intend to use effective study strategies, such as taking self-created practice tests (p<0.001). They were less likely to intend to use ineffective study strategies, such as re-reading lecture notes (p<0.001) and highlighting or underlining lecture notes (p<0.001). Students also were more likely to believe that they would learn (p<0.001) and retain more information (p<0.01) by changing their study strategies. Student pharmacists had more confidence in their ability to change their study strategies after completing the seminar (p<0.01). Implications: Previous research shows that student pharmacists are likely to use ineffective study methods. A study skills seminar is an effective way to increase student’s intentions to change study habits and improve their attitudes towards these behavior changes. Longitudinal studies are needed to determine the impact of this intervention on student study habits over time.

Evaluation of the Formative Aspects of an Integrated-Assessment Program Pilot: Student Perceptions and Patterns of Use. George Pachev, The University of British Columbia, Karen Dahri, The University of British Columbia, Marion L. Pearson, The University of British Columbia, Colleen M. Brady, The University of British Columbia, Kathleen MacLeod, The University of British Columbia, Simon P. Albon, The University of British Columbia. Objectives: In preparation for the 2015 launch of a new curriculum, a two-week respiration module was developed and pilot-tested. The integrated assessment program for the module included multiple online small-stakes formative assessments to support learning, in addition to the summative exams used to judge achievement of learning outcomes. This study examined (i) students’ perceptions, (ii) usage patterns of the online formative assessments and (iii) correlations between these patterns and performance on summative assessments. Method: Multiple formative quizzes and exercises were created for online administration at frequent points during the module. Repeated attempts were permitted and automated feedback was provided for out-of-class assessments. Comments from focus groups, an in-class debrief and a post-module survey were analyzed to evaluate students’ perceptions of the assessment program. Web analytics were used to determine usage patterns of the formative assessments. The correlations between these patterns and performance on the summative assessment measures were explored. Results: While appreciative of multiple opportunities to master the material, students indicated that having frequent formative assessments required substantial changes in study-habits. Improvements suggested included better communication regarding educational intent of the assessment program, fine-tuning of some questions and increasing the amount and specificity of feedback. No distinct usage patterns were identified. Correlations between summative exam results and frequency of accessing the formative tools failed to reach statistical significance. Implications: The results indicate two areas for improvement efforts: (i) enhancing the quality of individual tools with emphasis on better feedback, and (ii) aligning educational culture and practices with the assessment program.

Factors Associated with Academic Performance among First Year Pharmacy Students. Natalia Shcherbakova, Western New England University, Tatiana Makhinova, The University of Texas at Austin, Kathleen R. Silveira. Objectives: The objectives of this study were
1) to determine the association of five constructs (test anxiety, academic competence, test competence, time management and study strategies) with first semester GPA among PY1 students, 2) to examine predictors that may differentiate students into high- and low- academic performers, 3) to evaluate qualitatively student views on facilitators & barriers of study success. **Method:** Two cohorts of PY1 students (2013 (N = 73) and 2014(N = 74)) completed a web-based survey instrument containing previously validated scales measuring constructs of interest, study environment items (e.g., average hours devoted to study, work, student organizations and community activities), demographics, academic performance (GPA) as well as open-ended items assessing facilitators & barriers of study success. Descriptive statistics and bivariate analysis were used for objectives 1 and 2, and content analysis – for objective 3. **Results:** Academic performance (GPA) was significantly associated with test anxiety, test competence and academic competence (p<0.05). Study environment and demographic factors were not associated with academic performance. The most commonly reported facilitators of study success were access to recorded lectures & use of study guides, while the barriers were work & family responsibilities. **Implications:** The results of this study demonstrate that efforts geared towards reducing PY1 student anxiety and improving academic and test competence may have an impact on improved academic performance. Pharmacy programs may consider offering seminars on stress/anxiety management and academic and test competence to first year pharmacy students.

**Factors Influencing Career Aspirations of Third-Year Pharmacy Students.** Mark V. Siracuse, Creighton University, Bartholomew E. Clark, Creighton University. **Objectives:** To determine factors influencing career aspirations of third year pharmacy students. **Method:** A survey instrument was developed to collect data from third year pharmacy students on their pharmacy practice experience for pay. Variables collected were categorized as current pharmacy practice setting for pay, attitudes and opinions regarding the work setting, and demographic factors. Surveys were administered in five consecutive years beginning in 2006. The backward elimination algorithm of stepwise regression identified the best fit model influencing pharmacy student career aspirations. **Results:** The response rate over five years was 70.0% (561 out of 802). At least one pharmacy practice experience for pay was reported by 509 of 561 respondents (90.7%). Sixty-six percent reported practicing for pay in a community pharmacy, with 56.2% indicating a chain/grocery store.mass merchandiser pharmacy and 9.8% indicating an independent pharmacy. Nearly 27% practiced in a hospital pharmacy for pay and 7.1% reported otherwise pharmacy practice experiences for pay. Students with practice experience for pay were asked to complete eight items regarding their attitudes and opinions of these experiences. The regression model had an adjusted R2 value of 0.54. The most significant factors were: seeing oneself having a fulfilling career (beta = 0.459, p < 0.001), an optimal work schedule (beta = 0.358, p < 0.001), and current practice experience for pay being favorable (beta = 0.146, p < 0.001). **Implications:** Expectation of a fulfilling career appears to be the most significant factor influencing aspirations of future work place setting for students, and faculty should emphasize this in their interactions with students.

**Hands-On Learning Strategy for Third-Year PharmD Students Using Systemic Review and Meta-Analysis.** Yashwant V. Pathak, University of South Florida, Rahul Mhaskar, University of South Florida, College of Medicine, Sheetal Dharia, University of South Florida. **Objectives:** Our purpose was to assess the impact and usefulness of a combination of a didactic presentation and a hands-on learning strategy on third year pharmacy students’ knowledge regarding systematic review and meta analysis. **Method:** We conducted a pretest and post-test survey. third year pharmacy students completed an 11 question pretest survey at the beginning of a two hour workshop regarding role of systematic reviews and meta analysis in healthcare. The didactic presentation was followed by a hands-on activity where students learned to conduct a direct meta analysis using a Revman 5.3 software by the Cochrane Collaboration. Specifically, students imported the citations of relevant studies and inputted the data in the software and conducted a direct meta analysis generating a forest plot depicting pooled estimates and metrics for heterogeneity assessment. **Results:** 65 students participated that the teaching intervention improved knowledge regarding importance of having a clearly defined inclusion and exclusion criteria in a systematic review(t = -6.66 p = 0.00). There is strong evidence (t = -6.99, p = 0.00) that the teaching intervention improved knowledge regarding role of critical appraisal in a systematic review. There is also strong evidence that the teaching intervention improved knowledge regarding forest plot (t = 12.85, p = 0.00) and role of sub group analyses (t = 11.40, p = 0.00) in a meta analysis. **Implications:** There is strong evidence that the combination of didactic presentation and hands on conduct of a direct meta analysis improved the students’ knowledge regarding systematic review and meta analysis.

**Impact of Birkman Method® Assessment on Pharmacy Students’ Self-Confidence and Self-Awareness.** Whitney Maxwell, South Carolina College of Pharmacy, Amy D. Grant, South Carolina College of Pharmacy, Cathy L. Worrall, South Carolina College of Pharmacy, Patricia H. Fabel, South Carolina College of Pharmacy, Bob Davis, South Carolina College of Pharmacy, Bryan Ziegler, South Carolina College of Pharmacy, Breanne Martinez. **Objectives:** The objective of this study is to determine the impact of a Birkman Method® assessment on attitudes, self-confidence, and self-awareness and describe commonly occurring Birkman types in a sample of pharmacy students. **Method:** Following IRB approval, students were recruited for participation in a Birkman Method® testing and training program. The Birkman Method® assessment is a validated self-perception, social perception, and occupational interest tool providing a color-coded description of each participant’s interest areas, usual and stress behaviors, and needs. Of the 193 students screened, 114 took both the pre- and post-Birkman surveys, and 100 students completed both and released their Birkman types for research purposes. Each participant was asked to complete 6 questions assessing attitudes and confidence and an additional 7 self-awareness questions before and after the Birkman training program. **Results:** Seventy percent of participants were female and the mean participant age was 23.8 years. The predominant Birkman types in the sample were blue usual (48.3%), blue needs/motivation (22.0%), blue potential 1 (14.6%) and blue potential 2 (11.1%). There were no significant changes in student self-confidence from baseline, but there were statistically significant changes in self-awareness relative to communication and behaviors in both usual and stressful situations. The mean self-awareness accuracy score improved from baseline by 1.58 (95% CI:1.25-1.91) on a 6 point scale (p<0.0001). **Implications:** The Birkman Method® testing and training program may be a helpful tool for addressing student self-awareness, which is emphasized Key Element 4.1 of the 2016 ACPE Accreditation Standards.

**Impact of High and Low-Ranking Team-Members on Individual Scores in a Team-Based-Learning Integrated Literature Evaluation (ILE) Course.** Miki Goldwire, Regis University, Karen Smith, Regis University, Robert Haight, Regis University, Marianne McCol- lum, Regis University. **Objectives:** To determine if individual team-mem- ers’ individual readiness assurance test(iRAT)-scores will be lower if a greater number of team-mem- bers are in the bottom 25% at
the end of their P1-year, and vice-versa. **Method:** Our SOP employs TBL as its primary pedagogy. Students are placed in teams of 4 to 6 in which they maintain and work within for the entire semester. ILE occurs thrice weekly for 2-hours during fall P2 semester. Students prepare for class by reading pre-assigned materials. On day one, students complete an iRAT followed by the same test completed by team-members (tRAT), after which team application exercises are completed. We classified students’ class-rank into quartiles based upon their final P1-year GPA. Teams were dichotomized into categories of zero or one team-member in the higher-quartile, or two or more in the lower-quartile. An analogous upper-quartile variable was generated. Linear regression adjusted by age, sex and year taught (2010-2014) was conducted to determine the association between number of team-members in either the upper- or lower-class rank quartile and iRAT scores (10 point scale).

**Results:** Teams with two or more individuals in the lower class-rank quartile scored an average of 0.73 points lower than the referent on iRATs (95%CI: -1.12 to -0.34) after adjustment. There was no difference in iRAT average and number of team-members in the upper-quartile of class rank. **Implications:** Individuals on teams with more low ranking-members may be negatively impacted while the impact of high-ranking team-members may have no effect.

**Impact of Small-Group Sessions on Motivational Interviewing Outcomes.** Ginger Cameron, Cedarville University, Rebecca M. Widder, Cedarville University, Juanita A. Draime, Aleda M. Chen, Cedarville University, Mark Pinkerton, Cedarville University, Douglas C. Anderson, Cedarville University. **Objectives:** To assess the impact of integrating motivational interviewing (MI) training on student (1) attitudes, confidence, and perceived competence and (2) measured competence. **Method:** MI is a patient-centered approach that facilitates communication and health behavior change, essential skills for pharmacy practice. Students were introduced to MI during year 1 and reinforced in a second-year Cardiology module. IRB approval was obtained; students were broken into small groups (5-6 students) and for 4 hours to practice MI skills with a trained facilitator. Students then were assessed in a simulated MI patient encounter using the MITI (modified). Students completed a pre-post survey assessing their attitudes and perceived competence (4 items and 12 items, 6-point Likert-type, Strongly Disagree to Strongly Agree) and confidence (18 questions, 6-point Likert-type, Very Unconfident to Very Confident). The post-survey also contained retrospective pre-test items (i.e., before Cardiology, how confident . . . ). Changes were assessed using a Wilcoxon signed-rank test. **Results:** Students’ (N = 44, 100% response rate) pre-post attitudes toward MI significantly improved on 1 item (effectiveness of MI in eliciting behavior changes, p = 0.024), confidence on 9 items (p < 0.05), and perceived competence on 3 items (p < 0.05). Retrospective pre-post changes significantly improved on 3 attitude, all confidence, and 9 perceived competence items. The median MITI score was 22.5 (maximum = 30). **Implications:** Incorporating additional content on MI was beneficial in reinforcing and improving student perceptions of their MI skills. However, pharmacy students believed that they were more competent in MI prior to the reinforcement than they actually were, indicating the importance of reinforcing curricular content.

**Impact of a Landmark Trials Elective on Pharmacy Curriculum Outcomes Assessment (PCOA) Student Scores.** Julie N. Burris, Sullivan University, Emily Frederick, Sullivan University, Sarah E. Raake, Sullivan University, Kimberly K. Daugherty, Sullivan University. **Objectives:** Assess the impact of a Landmark Trials elective course on students’ literature evaluation and overall Pharmacy Curriculum Outcomes Assessment (PCOA) scores in an accelerated professional program. **Method:** Second professional year (PY2) students may select to enroll in a Landmark Trials elective. This elective critically evaluates primary literature with current therapeutic guidelines and applies the knowledge to patient care. Prior to beginning Advanced Pharmacy Practice Experiences, the PY2s completed the PCOA to measure performance, provide a comparison to national samples, and assess if the curriculum was meeting the desired outcomes. Student PCOA scores for those completing a Landmark Trials elective (N = 33) versus those that did not (N = 72) were analyzed using a two-sample t-test. **Results:** Students who completed a Landmark Trials elective did not differ significantly in overall GPA prior to the elective compared to those who did not take the elective (3.56 vs 3.44; p = 0.14). Students who completed the elective not only scored statistically higher on the Literature Evaluation portion of the PCOA (55.9 ± 14.9 vs 47.5 ± 17.7; p = 0.02), but they also scored significantly higher on the overall exam (376.4 ± 46.4 vs 340 ± 49.2; p < 0.05). **Implications:** The 2016 ACPE Standards continue to emphasize evaluation of scientific literature to provide patient-centered care. Results from this analysis reflect a positive impact of a Landmark Trials elective on student PCOA scores. The curriculum committee is reviewing this data to determine how to best include core elements of this elective for all students.

**Implementation and Evaluation of an Interprofessional Drug Take-Back Event on a University Campus.** Daniel Ventricelli, Iqra Ahmad, Rajkumar J Sevak, Nicholas E. Hagemeier, East Tennessee State University, Jeffrey A. Gray, East Tennessee State University. **Objectives:** 1) To describe the interprofessional implementation process and programmatic outcomes of an inaugural drug take-back event on a university campus; 2) To quantify donated medications and summarize donor demographics. **Method:** East Tennessee State University (ETSU) affiliated colleges, campus organizations, research teams, law enforcement and other community partners collaborated to host the inaugural live drug take-back event on ETSU’s main undergraduate campus. Programmatic outcomes included the number of community stakeholders, ETSU participating colleges, student donors, and donated medication metrics, including controlled substance medications. All donated medications were quantified by drug name and controlled substance schedule. Donor demographic information and perceptions of drug abuse on campus were collected using a brief survey. **Results:** Fifty pounds of medications were collected for disposal by 42 donors (9 students; 33 non-students). Controlled substances accounted for 8% of donated medications. Nearly 80% of student donors were enrolled in Academic Health Science Center colleges. Aggregate survey results indicated concerns about prescription drug abuse and misuse on campus. Three faculty members, two research fellows, two doctoral students, three graduate assistants and eight professional students from ETSU’s Colleges of Pharmacy and Public Health, as well as additional staff members, represented the contributing community entities and colleges during the live event. **Implications:** Conduction of drug take-back events on a university campus can promote interprofessional public health interventions and simultaneously reduce opportunities for non-medical use of prescription drugs in college students. Further research is warranted to establish best practices and maximum impact for college-based take-back events.

**Implementation and Measurement of Effects of an Exam Item Review Process in a Team-Taught Course Sequence.** David J. Caldwell, The University of Louisiana at Monroe, Laurel A. Sampognaro, The University of Louisiana at Monroe, Adam Pate, The University of Louisiana at Monroe. **Objectives:** To improve exam item quality by educating and involving course instructors in evidence-based item review and encouraging use of this process in future courses. **Method:** A peer-review process was implemented in a two-course sequence (intervention) that involved training and review sessions before each
exam and was compared to the previous year’s courses (control). Instructors completed pre- and post-surveys regarding training, experience, self-confidence and self-rated success in multiple-choice item writing. Item statistics were calculated for all items in the control and intervention sequences and compared using independent t-tests. Items were also classified into levels based on difficulty and discrimination, and distribution into these levels was compared between sequences with independent t-tests. Results: There was not a statistically significant difference between the control and intervention sequence items with regard to mean difficulty (86.3% and 84.4%) or discrimination (0.225 and 0.247), although item classification distribution did appear to change between the two. Subjective feelings of confidence and success in item writing increased between the pre- and post-surveys (6.0 to 8.1, p = 0.002; and 6.4 to 7.9, p<0.001, respectively). Confidence in personal ability to peer-review test items (6.7 to 8.4, p = 0.005) and to implement a formal item evaluation process (5.5 to 7.1, p = 0.008) also increased. Implications: Item statistics did not change significantly, but reviewed and edited items distributed more favorably into item statistic-based categories. This method of review positively affected instructors’ perceptions of item-writing confidence and success and improved self-rated opinions of ability to edit items and train others to do so.

Improving Interpersonal Communication Skills in Medical and Pharmacy Students Using an Interprofessional Blended Learning Course. Nicholas E. Hagemeier, East Tennessee State University, Nasar Ansari, East Tennessee State University, Tandy Branhman, East Tennessee State University, Daniel Rose, East Tennessee State University, Rick Hess, East Tennessee State University. Objectives: 1) To evaluate the impact of an interprofessional blended learning course on pharmacy and medical students’ communication skills; 2) To compare pre- and post-course communication skills across cohorts. Method: Pharmacy (N = 57) and medical (N = 67) students enrolled in a required Communication Skills for Health Professionals course completed asynchronous online modules and face-to-face standardized patient interview sessions over the course of 1 semester. Students completed pre- and post-course objective structured clinical examinations with standardized patients and were evaluated by trained faculty using the validated Common Ground Instrument. Communication skill domains evaluated on a 1 to 5 scale included: rapport building, agenda setting, information management, active listening, addressing feelings, and establishing common ground. Nonparametric statistical tests were used to examine paired pre-/post-course domain scores within professions and pre- and post-course scores across professions. Results: Performance in all communication skill domains increased significantly for pharmacy and medical students (p values<0.001). Pre-course scores for the rapport building domain were significantly higher for medical students (median = 3; p<0.001); however, post-course rapport building scores were significantly higher for pharmacy students (median = 5; p = 0.006). No additional significant pre- or post-course differences were noted across disciplines. Implications: The blended learning Communication Skills for Health Professionals course improved students’ interpersonal communication skills across multiple domains. Fostering communication skill development in medical and pharmacy students could improve the extent to which future health care professionals engage in patient-centered communication.

Improving a Curriculum Through Incremental Changes Based on Programmatic Assessment Results. Batoul Senhaji-Tomza, Touro College of Pharmacy-New York, Suzanne Soliman, Touro College of Pharmacy-New York, Paramita Basu, Touro College of Pharmacy-New York. Objectives: To describe implementation of incremental curriculum changes aimed at addressing identified gaps via subjective and objective programmatic assessment in a 2 + 2 curriculum. Method: After low first-time NAPLEX pass rates for two consecutive class years, subjective and objective assessment of a 2 + 2 curriculum was conducted. The curriculum was benchmarked to the other existing 2 + 2 program. Other assessments that occurred include: intensive course content review, course credit number versus instructional time audit, vertical and horizontal topical sequence revision in the clinical, basic sciences and social and behavioral course sequences; faculty/ student feedback and focus groups; outside experts and best practice consulting. Results: Instructional time was increased from 15 to 19 weeks to mirror the only successful 2 + 2 Pharm.D program. Discrepancies in instructional time versus credit hours were identified in four courses resulting in increased instructional times. Laboratory courses increased from sporadic lab meeting times to once weekly meetings times (three courses) resulting in further strengthening of the compounding curriculum. Nine new therapeutic topics introduced during years 3 and 4 were reinstated in the first two years. Topical clinical sequence was revised to integrate and harmoniously match the basic science curriculum. Social and behavioral course sequence was benchmarked to other pharmacy programs and resequenced and adjusted accordingly. Implications: Curricular assessment is valuable in addressing gaps and strengthening a curriculum. Further study is necessary to determine if the changes implemented are valuable and positively impact performance on first-time NAPLEX pass rates.

Innovative Leadership and Diversity: A Multifaceted Approach to Achieving Diversity Outcomes. Carla Y. White, University of North Carolina at Chapel Hill, Victoria Hammett, University of North Carolina at Chapel Hill, Jessica M. Greene, University of North Carolina at Chapel Hill. Objectives: To explore the impact of leadership and organizational structure on achieving student diversity Method: The Office of Innovative Leadership and Diversity was established to develop a sustainable infrastructure to advance diversity at a School of Pharmacy and is led by an Assistant Dean. The unit is accountable for developing a critical mass of diverse students; coaching senior leaders on diversity issues; engaging alumni and community partners; constructing cross-cultural curricular experiences, and disseminating best practices to achieve diversity and inclusion. Results: Currently, 83% (N = 517) of the pharmacy student body is engaged in activities within the Office of Innovative Leadership and Diversity. Sixty percent of the PharmD program’s underrepresented talent attended one or more programs and received mentoring and guidance through the Office prior to admission. The percentage of underrepresented students increased from 19% to 27%, since the inception of the Office. Cultural Competence Modules highlighting cross-cultural communication were implemented in the curriculum. The Office contributed to 18 publications and 72 presentations and is regarded as a leading, award-winning entity in advancing diversity across the health sciences. Implications: Pharmacy programs that have formalized a commitment in achieving student diversity through accountability and an organizational infrastructure may be better positioned to sustain a comprehensive, impactful approach in developing an inclusive educational environment and ultimately a diverse workforce.

Investigation of Comparative Effectiveness Research (CER) in Asia, Europe, and North America. Isha Patel, Shenandoah University, Jongwha Chang, Samford University, Rachel Rarus, The University of Toledo Medical Center. Objectives: Comparative Effectiveness Research (CER) is an important branch of pharmacoeconomics that systematically studies and evaluates the cost-effectiveness of medical
interventions. This review study compares CER in developed and developing nations. Method: China, India, South Korea, and the United Kingdom are of essential focus, because these country’s economies and healthcare expenses continue to expand. We conducted a thorough comparison of CER in the above mentioned nations, their strategies and their organizational set up. Information was researched through databases such as google scholar and the professional organization sites such as NICE and HIRA. Results: CER plays instrumental roles in guiding government public health policy programs and insurance. Countries throughout the world use different methods of CER to help make medical decisions based on providing optimal therapy at a reduced cost. The structures and use of CER are diverse throughout the countries we studied and each is of prime importance. The patient centered medical home has been created to help reduce costs in the primary care sector and to help improve effectiveness of therapy. Barriers to CER are also important as many stakeholders need to be able to work together to provide the best CER evidence. Implications: This review can help guide public health and medical decision-making in order to continue to expand the establishment and role of CER programs. The advancement of CER in multiple countries throughout the world provides a possible way of reducing costs to the healthcare system.

Is This Research? A Case of Ethical Tensions in Evaluating Canadian Experiential Education in Pharmacy. Katrina Mulherin, University of Toronto. Objectives: In 2014, the Association of Faculties of Pharmacy of Canada (AFPC) commenced a project to describe, on a national scale, the current state of ExEd in pharmacy in Canada; best practices for delivering ExEd; and prototypes for achieving best practices. Data collection used methods adopted from qualitative research, including literature review, key informant interviews, focus groups and surveys. Thematic and mixed inductive/deductive data analysis approaches were similarly informed by qualitative research methodologies. Early in the project, the question arose: Should this work be formally conceived of as research, or a form of program evaluation? Resolution would determine the necessity of research ethics board (REB) approval from one or more participating universities. Method: Several complex issues were considered, and various resources consulted, including similar publications, university REB, and guidelines designed to differentiate between research and program evaluation. Core issues including whether peer-reviewed publications were a major project goal; and the potential for applications to multiple university REBs. Results: It was ultimately determined the project did not primarily constitute ‘research’ but rather ‘program evaluation’, and was thus exempted from full ethics review. Implications: This case study highlights the complex considerations and blurred lines between research and program evaluation: an issue increasingly negotiated by researchers and project managers and associated university REBs. Despite the determination that the current project is not formal ‘research’ per se, ethical practices mandatory in formal academic research continue alongside ‘qualitative research-based data collection and analysis. This account may prove informative for others undertaking similar evaluative work.

Modeling the Measurement Properties of Multiple Low-Stakes Short Tests in a Program of Assessment. George Pachev, The University of British Columbia, Marion L. Pearson, The University of British Columbia, Karen Dahri, The University of British Columbia, Kathleen MacLeod, The University of British Columbia, Colleen M. Brady, The University of British Columbia, Simon P. F. Albon, The University of British Columbia. Objectives: Using multiple small-stakes short tests rather than a few high-stakes long examinations for summative assessment is a design feature of assessment programs for contemporary competency-based curricula. This strategy was implemented in a two-week integrated respirology module, developed and pilot-tested in preparation for the launch of a new curriculum. The goals of this study were to (i) evaluate the measurement precision of this strategy, and (ii) explore the optimal number and relative weight of the multiple small-stakes assessments. Method: The reliability of seven short assessment instruments was evaluated in the context of generalizability analyses followed by decision studies exploring ways to increase precision of the instruments. The reliability of composite results was evaluated based on classical measurement theory. Individual instruments’ reliability and relative weight, and the number of assessments, were varied across several scenarios in order to explore the optimal measurement conditions for the summative component of a program of competency assessment. Results: Overall reliability was 0.80, while reliability of individual instruments ranged from 0.36 to 0.76. Lower reliability occurred in instruments with few items. Reducing the relative weight of the low-reliability instruments increased the reliability of the overall score. Improving individual instruments’ reliability to within the 0.60-0.70 range would elevate overall reliability to 0.84, even with a reduced number of tests. Implications: Using multiple small-stakes short exams for summative assessment is a viable strategy to support decision-making regarding students’ achievement of desired competencies. An important factor for overall reliability is the precision of the tests comprising the assessment program.

PROEM Center of Excellence in CER-PCOR: Building the CER Workforce through Interprofessional Education and Training. Eleanor M. Perfetto, University of Maryland, C. Daniel Mullins, University of Maryland, Robin Newhouse, University of Maryland School of Nursing, Chinenyi Anyanwu, University of Maryland. Objectives: Healthcare reform resulted in major investments in comparative effectiveness and patient-centered outcomes research (CER-PCOR), highlighting attention on patient engagement in research, decision making, and dissemination. Patient engagement and patient-centered activities represent a specialized area of CER, requiring skills that are in short supply. Our aim is to describe an innovative, interprofessional program designed to expand and improve education and training in CER-PCOR. Method: The Patient-Centered Research for Outcomes, Effectiveness, and Measurement (PROEM) Center of Excellence in CER-PCOR training was established to expand and improve training in CER-PCOR. The Center employs two approaches to enhance CER-PCOR education and training opportunities: 1. expansion of an existing MS/PhD degree granting program to include a new concentration in CER-PCOR, and 2. Interprofessional CER-PCOR-specific online and in-person continuing education programs. Results: Through expansion of the graduate program, two new CER-PCOR courses were added to the curriculum, taught by faculty from the Schools of Pharmacy, Medicine, and Nursing, and a range of external experts serving as guest faculty. Continuing education programs such as the in-person, five-day CER-PCOR Summer Institute and online CER-PCOR module series are designed to introduce researchers and practitioners to the fundamentals of CER-PCOR. Implications: Researchers and clinicians must be well versed in a wide range of methods to effectively conduct studies, translate and disseminate results, and critically evaluate patient-centered outcomes research. The PROEM Center of Excellence, a model program for advancing CER-PCOR education and training, provides healthcare professionals with the skills to conduct PCOR activities and appropriately interpret, and apply findings from CER and PCOR studies.

Patient Satisfaction and Early Retention in HIV Care among Patients Receiving Antiretroviral Therapy in Nigeria. Eberechukwu Onukwugha, University of Maryland, Jimani Jayasekera, Chinenyi Ugoji, Institute of Human Virology, University of Maryland,
Patient satisfaction has been considered a key component in the assessment of competency of health care providers and quality of care. We evaluated the impact of patient satisfaction on patient retention in HIV treatment settings. Method: The data was collected from 35 sites affiliated with the ‘ACTIONPlusUp’ program in Nigeria. The cross-sectional study included a randomly selected sample of 3,730 patients aged ≥ 15 years on antiretroviral therapy, who received healthcare services at the sites in 2010. A study-specific Likert-type instrument was administered to evaluate patient satisfaction in the domains of waiting time, communication, referrals, and quality of care at the point of exit from the treatment center. Patient retention was measured in terms of the number of clinic visits during the review year. Random intercept/slope logistic regression models were used to quantify the extent to which patient satisfaction would influence retention controlling for site and individual-level characteristics. Results: The average age of the sample was 37 years (SD: 10), and majority were women (64%). During the review period, 62% reported more than one follow-up visit. The receipt of a basic care package and prevention education at baseline was positively associated with retention (OR: 1.62, 95% CI: 1.29-2.30). Overall, increasing levels of patient satisfaction in communications with pharmacists and physicians at the sites were positively associated with retention (OR: 2.34, 95% CI: 1.45-2.85). Implications: Patient satisfaction in interactions with health care providers can influence HIV care outcomes such as retention. Strategies to ensure sustained retention must consider patient, provider and site-level characteristics in HIV care settings.

Perceived Abilities of Third-Year Pharmacy Students in Performing Medication Therapy Management. Ahmed M. Alshehri, University of Texas at Austin, College of Pharmacy, Jamie C. Barner, The University of Texas at Austin, Sharon Rush, The University of Texas at Austin. Objectives: Medication Therapy Management (MTM) education provided in Colleges/Schools of Pharmacy range from elective didactic courses to experiential education. The University of Texas College of Pharmacy introduced a required MTM course consisting of both didactic lectures and experiential opportunities in community pharmacy settings. The objective was to examine the impact of the MTM course on third-year pharmacy students’ (P3s) perceived abilities and intentions to provide MTM services before and after the course. Method: An anonymous 48-item survey using a 5-point Likert scale (1=strongly disagree; 5=strongly agree) was administered to P3s before and after the MTM course. Forty-six items measured abilities in MTM provision using the following 6 subdomains: medication therapy review (MTR), medication-related problems identification/recognition (MRP), disease measurement/monitoring (DM), communication (CO), follow-up/referral (FR), and billing/documentation (BD). Two items assessed intent to provide MTM in practice. Descriptive statistics, Cronbach’s alphas, and paired t-tests were used. Results: All enrolled P3s (N = 64) completed both surveys. Subdomain Cronbach’s alphas ranged from 0.70-0.97. Paired t-test showed no significant difference in intention to provide MTM before and after the course. However, the results revealed a significant increase in perceived abilities (before vs. after, respectively) regarding MTR (3.2 ± 0.6 vs. 4.2 ± 0.4, p < 0.0001), MRP (3.3 ± 0.6 vs. 4.2 ± 0.4, p < 0.0001), DM (4.2 ± 0.5 vs. 5.0, p < 0.0004), CO (3.9 ± 0.5 vs. 4.3 ± 0.4, p < 0.0001), FR (3.7 ± 0.8 vs. 4.2 ± 0.6, p < 0.0002), and BD (2.4 ± 0.9 vs. 3.9 ± 0.8, p < 0.0001). Implications: A required MTM course with both didactic and experiential components was instrumental in improving P3s’ perceived abilities to provide MTM services. More research is needed to determine what factors affect P3s’ intention to provide MTM services.

Perceived Stress and Coping Strategies Among Health Care Profession Students. Scott A. Baggarly, The University of Louisiana at Monroe, Roxie L. Stewart, The University of Louisiana at Monroe, Adam Pate, The University of Louisiana at Monroe. Objectives: To assess perceived stress, major stress factors, and coping strategies among health care profession students in the College of Health and Pharmaceutical Sciences at the University of Louisiana at Monroe. Method: Students majoring in professional health care curricula were emailed invitations to participate in perceived stress surveys administered at the beginning (BL), midpoint (MP), and end (EOS) of the fall 2014 semester. Surveys included the 14-Item Perceived Stress Scale (PSS-14), major stress factors, and coping strategies. Based upon responses, students were grouped as pharmacy majors, nursing majors, and other. PSS-14 scores were compared statistically among majors and the time of the semester using analysis of variance models. Descriptive analyses of stress factors and coping strategies were performed. Results: Respondents included 275 students (BL), 218 students (MP), and 172 students (EOS). No significant difference in PSS-14 scores was present by major at BL (p = 0.9024) or MP (p = 0.8801). At EOS, mean scores were higher for nursing majors (40.42) than pharmacy majors (35.09; p = 0.0261) and other majors (33.15; p = 0.027). PSS-14 scores increased within each group from BL to MP (Nursing: 31.75 vs. 36.39, p = 0.0313; Pharmacy: 30.37 vs. 34.87, p = 0.0021; Other: 32.07 vs. 36.84, p = 0.0295). No significant difference existed within groups in PSS-14 scores between MP and EOS. Overall, the top factor contributing to stress levels was academic responsibilities (49.2% of students). The top coping strategy was talking with friends or family (72.6% of students). Implications: Information on perceived stress and coping strategies could help identify modifiable risk factors for poor student outcomes.

Pharmacy Preceptor Perceptions of the Educating Pharmacists in Quality (EPIQ) Program Student Quality Improvement Projects. Joni L. Dean, The University of Arizona, Melissa L. Nelson, The University of Arizona, Terri L. Warholak, The University of Arizona. Objectives: To investigate preceptor perceptions of the impact of pharmacy student quality improvement (QI) projects conducted at various practice sites. Method: A questionnaire was created to collect qualitative and quantitative data on preceptor perceptions about the impact of student QI projects at their practice sites. Preceptors were recruited from sites involved in the Educating Pharmacists In Quality (EPIQ) program, which is part of the curriculum at one University. The questionnaire included 9 open-ended questions on perceptions of QI project value and 12 closed-ended questions that utilized a 5-point response scale to assess preceptor perceptions of skill improvement, practice site impact, and project barriers. A pilot study was performed to refine the questionnaire. Telephone interviews were conducted using the revised questionnaire; interviews were recorded and transcribed. Qualitative analysis was used to identify commonly occurring themes, while Rasch analysis was utilized to evaluate scaled questions and response scale function. Results: Qualitative analysis revealed that student QI projects: increased preceptor awareness of QI; helped identify future QI opportunities; increased patient safety by improving adherence to treatment protocols; and provided additional personnel resources. Rasch analysis revealed all scale items fit the model; however, the rating scales had to be adjusted to fit. Reliability for the subscales was 0.60, 0.71, and 0.51 for preceptor skill improvement, site impact, and project barriers respectively. Implications: Preceptors perceived that student QI projects helped to improve quality and safety at their clinical practice sites.

Pharmacy Student Perceptions of Teaching Award Recipients and Teaching Excellence. Mary E. Kiersma, Accreditation Council for Pharmacy Education, Aleida M. Chen, Cedarville University, Nicholas Fusco, University at Buffalo, The State University of New York, Elizabeth
seriousness with which the public perceives the profession's healthcare predominantly depicted on comedy shows, which may reflect the lack of background of everyday life. In addition, the pharmacy profession is pharmacists are typically portrayed as a supporting character, in the

episodes. The top two television genres that featured the pharmacy pro-

fession were comedy (73%) and drama (20%).

Results: Student respondents (N = 582) were evenly distributed across school year terms (P1 = 24%, P2 = 22%, P3 = 29%, P4 = 24%) and were representative in terms of gender (69% female) and type of school (53% private). The top-ranked characteristics considered when selecting an instructor for an award were: demonstrating compassion and caring for students (N = 131), creating an engaging classroom environment (N = 113), and being knowledgeable about the subject matter (N = 89). Criteria considered very important when selecting an instructor included: effective communication skills (N = 371), enthusiasm toward teaching and learning (N = 345), knowledgeable (N = 325), good role model/mentor (N = 306), and helps students understand how subject relates to profession (N = 304). Criteria that should be considered and were ranked as very important did not differ from initial top 5 characteristics identified. Implications: Students select teaching award recipients who are compassionate, engaging and knowledgeable. These results can help faculty understand student perceptions regarding teaching excellence. Students may need additional information regarding other criteria important for teaching excellence, such as the scholarship of teaching and learning.

Pharmacy on the Small Screen: The Television Portrayal of the Profession. David M. Baker, Western New England University; Eric C. Nemec, Western New England University. Objectives: This research project’s intent was to catalog the pharmacy profession’s portrayals in North American television shows, categorizing characteristics of the roles and their historical accuracy to draw sociological conclusions correlated to society’s perspective of pharmacy practice. Method: The authors independently conducted a systematic review of known Internet television databases (e.g., IMDB) for keywords like pharmacy, pharmacist, or drugstore, which were considered indicative of pharmacist or pharmacy portrayals on television. Television episodes were considered eligible if produced in North America, available to be viewed, and/or contained a credited or uncredited pharmacist role or pharmacy depiction. Results: We identified 435 television episodes released from 1952 to 2015 that contained a pharmacy scene. When stratifying by type, most of the roles (84%, n = 365) were supporting characters, or in the background of the primary story. Pharmacists were featured as the leading character in only 2.5% (n = 11) of identified episodes. The top two television genres that featured the pharmacy profession were comedy (73%) and drama (20%).

Implications: Culture, in the modern age, is often documented through its media. In contrast to pharmacy’s portrayal in films, the majority of television appearances occur post-1960. Similar to the general perception of the profession, pharmacists are typically portrayed as a supporting character, in the background of everyday life. In addition, the pharmacy profession is predominantly depicted on comedy shows, which may reflect the lack of seriousness with which the public perceives the profession’s healthcare role. Such media portrayals are often surrogate markers of the public’s perception of pharmacy’s place in society.

Play SPENT: Use of an Online Game to Evaluate Undergraduate Students’ Attitudes toward People in Poverty. Carriann E. Richey Smith, Butler University, Priscilla T. Ryder, Butler University. Objectives: The primary objective was to examine the effectiveness of using an online simulation, SPENT, to affect students’ attitudes toward people in poverty. Method: This observational study took place during the 2013-2014 academic year. Pre and post surveys used the Undergraduate Perceptions of Poverty Tracking Survey (UPPTS) to assess attitudes toward poverty. Students played the SPENT game and participated in either a class discussion or blog regarding the game. The post-survey also asked open-ended questions on the experience. Results: Of 306 students who completed both the pre and post-surveys, 240 students were pharmacy majors, 36 physician assistant majors and 30 students were studying communication sciences and disorders. Overall, statistically significant improvements in scale scores were seen after playing the game. This improvement was consistent when examined by gender, course, discipline, and pre-test score quartile. Eighty-one (26.5%) thought the exercise was ‘very worthwhile’, 168 (54.9%) ‘worthwhile’. A majority of students endorsed the items ‘living in poverty is more difficult than I thought’ (191, or 62.4%), ‘I feel more understanding for those less privileged’ (196, or 64.1%).

Implications: Negative attitudes toward those in low economic situations could interfere with the provision of client-centered care, patient advocacy and public policy development. The results of this study suggest that an online poverty simulation program may improve the perspective of these undergraduate students. The SPENT game is a low stakes opportunity, requiring very little instructor and student time, to address an important issue.

Predisposition of P1s for Empathy, Cultural Competence, and Perceptions for Motivational Interviewing: Implications for Training. Gladys Ekong, Auburn University, Jan Kavookjian, Auburn University, Justin K. Owensby. Objectives: As provider status for pharmacists is eminent, it is increasingly important train future pharmacists in communication skills and contexts for delivery of advanced care services. The purpose of this project was to assess predispositions of incoming first year pharmacy students to identify potential curricular content areas in preparation for these contexts, including perceptions of empathy, cultural competence, and motivational interviewing (MI). Method: First year students (150) were informed about the IRB-approved study; online (Qualtrics) questionnaires collected self-report for the Kiersma-Chen empathy scale (KCES), the Intercultural Sensitivity Scale (ISS), and perceptions about counseling contexts and MI use in current and future patient encounters. Data were analyzed using descriptive statistics, correlations, and ANOVA to explore relationships between variables. Results: The participating students (n = 130, 86.7%) perceived that in the future, they will be counseling patients for medication adherence (89.2%) and for comprehensive disease management self-care behaviors (82.3%). After MI exposure, students reported expectations for using MI in current (56.1%) and future (72.3%) patient encounters. Student predisposition for empathy was most significantly associated with being female and with expectations for future counseling and use of MI (p < 0.05); intercultural sensitivity was significantly associated with being of non-Caucasian race; higher predisposition for empathy and intercultural sensitivity were significantly correlated (r = .328). Neither empathy nor intercultural sensitivity was significantly associated with performance on MI OSCE. Implications: Predisposition for empathy and cultural sensitivity may be useful to screen among incoming pharmacy students to inform scope of training in these topic areas.

Publication Rates of Abstracts Presented at American Association of Colleges of Pharmacy (AACP) Annual Meetings. Samantha H. Spencer, University of Illinois, Katie Suda, Department of Veterans Affairs, University of Illinois at Chicago, Michael Gabay, University
of Illinois. Objectives: Pharmacy education is rapidly changing with an expansion in the number and size of colleges/schools of pharmacy (COP) and increasing expectations for scholarship. However, manuscript publication rates of AACP abstracts is not known. The aim of this study was to examine trends in manuscript publication rates for abstracts presented at the 2000, 2005, and 2010 AACP annual meetings. Predictors for publication were also evaluated. Method: Manuscript publication of AACP abstracts was determined through a systematic search of PubMed, Scopus, and Google Scholar. ‘New’ COPs were defined as receiving accreditation after 1996 (AJPE.2009;73:96). Contingency tables and t-tests were applied; p value <0.05 was considered significant. Results: 957 abstracts were evaluated. First authors had a new COP affiliation for 19.6% of abstracts, increasing from 7.2% in 2000 to 30.3% in 2010 (p<0.001). There was no difference in publication rates over the ten years (2000 = 16.2% abstracts published, 2005 = 24.1%, 2010 = 21%). The most frequent journal for publication was the American Journal of Pharmaceutical Education (56.7%). Predictors for publication include authors from multiple institutions (p=0.001), COPs with a PhD pharmaceutical program (p=0.014), and use of inferential statistics (p=0.002). There was no difference in manuscript publication when comparing new and old schools, public and private schools, and location at an academic health center. Interestingly, old schools published 2005 abstracts more frequently (p=0.0347). Implications: Despite the increase in AACP abstracts presented by faculty at new COPs, the publication rate of AACP abstracts has not changed. Collaboration amongst institutions and rigorous methods predict translating an abstract to a publication.

Publications and Presentations from PharmD Student Research Projects: A Systematic Review. Marion K. Slack, The University of Arizona, Jennifer R. Martin, The University of Arizona, Leah Worede, The University of Arizona, Sameer Islam, The University of Arizona. Objectives: To conduct a systematic review of reports of pharmacy student research programs to describe publication and presentations resulting from the research. Method: To be eligible for the systematic review, studies must have described student research programs in which students were required to collect, analyze, report or present findings and be reported in English. Candidate studies were screened and data extracted using standardized forms by two investigators independently with the final list identified by consensus. The primary outcome variables were extramural posters/presentations and publications. Data were summarized in tables. Results: A total of 6112 studies were screened and 12 studies were identified that described student research meeting inclusion criteria; two reports were from outside the United States. Two-thirds were reports of required projects and a third were elective projects. Required research projects were conducted on a wide variety of topics including clinical, practice, laboratory, public health, education and other topics. Elective research was focused on clinical, practice, and laboratory topics. Components of the research process were not uniformly described. The terminal project requirement was usually a written report (67%) or a poster (42%). One program required a presentation. Overall, 67% of programs reported that student projects resulted in both extramural posters and publications; a single program reported only extramural posters. A slightly greater proportion of elective programs (75%) reported extramural posters and publications than did required programs (63%). Implications: Most student research programs resulted in both extramural posters and presentations indicating that the outcomes of student research extend beyond simply learning the research process.

Qualitative Analysis of Motivational Interviewing Outcomes After Small Group Sessions. Rebecca M. Widder, Cedarville University, Juanita A. Draime, Ginger Cameron, Cedarville University, Aleda M. Chen, Cedarville University, Mark Pinkerton, Cedarville University, Douglas C. Anderson, Cedarville University. Objectives: To qualitatively describe student perceptions of small group motivational interviewing (MI) training facilitated by either faculty or students. Method: Patient counseling skills are becoming increasingly important for pharmacists, and MI can be effective in promoting positive and reducing maladaptive health behaviors. Second-year professional pharmacy students (N = 44) engaged in small group MI educational sessions facilitated by a trained third-year pharmacy student or faculty member. Students (N = 9, 7 from student-facilitated 2 from faculty-facilitated) were randomly selected to participate in a focus group session regarding their experience. Guiding questions were created for the session after an extensive review of the literature and discussion amongst researchers. Follow-up questions were asked based on participant responses. Discussions were moderated by trained research assistants who took notes and recorded the sessions using LiveScribe® pens. Data were transcribed verbatim, and QSR NVivo 10 was used to perform content analysis and identify grounded themes in student responses. Results: Predominant themes that emerged included: MI seemed more accessible, providing feedback to peers reinforced their own knowledge, and small groups provided a more open environment to make mistakes. Students also reported that MI techniques still felt somewhat unnatural, they were unsure how to practically fit MI into practice, and that they would like to self-evaluate footage of themselves participating in an MI interview. Implications: This research suggests that peer-focus reviewed, small group settings can increase student confidence in MI and health behavior change counseling skills, but work is still needed to reinforce the utility of MI in practice.

Relationship between Intra-Semester Quizzes and Cumulative Exam Score in a Team-Based Learning Literature Evaluation Course. Miki Goldwire, Regis University, Karen Smith, Regis University, Marianne McCollum, Regis University. Objectives: The objective was to examine the association between intra-semester quiz grades and cumulative exam scores in a TBL-delivered curriculum for an Integrated Literature Evaluation (ILE) course. Course topics include drug information (DI), research methods (RM), and biostatistics. Method: Regis University SOP employs TBL as its primary pedagogy. ILE occurs thrice weekly for 2-hours during Fall P2 semester. Three faculty teach and coordinate content. Students prepare for class by reading pre-assigned materials. On day one, students complete an individual readiness assurance test (iRAT) followed by the same test completed by team members (tRAT) to ensure understanding of the pre-assigned readings. After which team application exercises are completed. Exams are also completed. To determine the correlation between intra-semester iRATs and cumulative exam scores we conducted Spearman’s rho analysis. Bonferroni’s post-hoc tests were performed to determine differences between course topics and cumulative exam score. Results: A total of 332 students contributed to the five-year class experience. Exam scores were negatively correlated with iRAT scores (p = 0.005). When considering Bonferroni post hoc comparisons, RM-iRATs were negatively correlated with exam scores (-0.18, p = 0.007). No correlation was found between DI-iRATs and exam scores or biostatistics iRATs and exam scores. A positive correlation was found between RM-iRATs and biostatistics iRATs (0.79, p<0.001). Implications: Cumulative exam scores are associated with a 0.15 lower iRAT score (p = 0.005). This may indicate that students who scored lower on iRATs performed higher on exams, despite increased item complexity, possibly due to the influence of team work, and more time with the material.

Stress and Health-Related Quality of Life among Graduate Students in the ISPOR Student Network. Motolani Ogunsanya, Poorjeet Sudhapani, Benita A. Bambade, The University of Texas at Austin, Andrew Thach, Karen L. Rascati, The University of Texas at Austin.
Student Perceptions of Active Learning Methods in Pharmacy Management. Jacob T. Painter, University of Arkansas for Medical Sciences, Ashley N. Castleberry, University of Arkansas for Medical Sciences. Objectives: Active learning is a teaching method that can develop critical thinking and problem solving skills in order to help students become self-directed, lifelong learners. Many active learning methods are being used in pharmacy schools, but student perceptions of these methods should also be assessed and influence future use of these methods in specific courses. Method: Third year pharmacy students (n = 82) were asked a series of questions during the first week and last week of a required Pharmacy Management course. In addition to demographic questions, students were asked for preferences on teaching methods before and after the course. Students rated their preference for lectures, team-based learning, and case conference methods (Likert scale, 1 = Strongly Disagree to 5 = Strongly Agree). Descriptive statistics for all variables were collected and linear regression was used to control for covariates when examining the differences in before and after preference scores. Qualitative feedback was also gathered from openended responses. Results: Preference for lecture decreased (3.91 vs. 3.60; p<.01) while preferences for case conference (2.57 vs 2.97; p = 0.02) and team-based learning (1.94 vs. 2.46; p<.01) increased over the course of the semester. Qualitative responses indicated that students enjoyed the active learning methods. Implications: Student perception of teaching methods changed after experiencing them. Active methods of TBL and case conferences were not perceived highly by students at the beginning but increased by the end of the course. When making large changes to teaching methods in a course, student input should always be sought to improve future activities in the course.

Student Perceptions of a Redesigned Top 200 Course Series. Maureen E. Knell, University of Missouri-Kansas City, Tatum N. Mead, University of Missouri - Kansas City. Objectives: Prior to 2014, the required Top 200 course series included self-directed learning with an online examination requiring 70% pass rate, though allowing multiple attempts. Course redesign included 5 interactive group sessions, supplemental videos, 4 examinations and a comprehensive final requiring a 70% pass rate for the course. The study objective was to evaluate student perceptions and applicability of information learned in a redesigned course series. Method: Data from voluntary pre-class questionnaires (Pre-Q) and post-class questionnaires (Post-Q) were collected with primary focus on achievement of course objectives. Results: The Pre-Q and Post-Q response rates for Top 200 I (N = 144) were 95.8% (N = 138) and 70.1% (N = 101) and Top 200 II (N = 125) Pre-Q and Post-Q response rates were 96.0% (N = 120) and 73.6% (N = 92). Questions assessed perceived abilities to achieve the course objectives using a 5 point Likert scale. Top 200 I responses indicating “Strongly Agree” or “Agree” in meeting course objectives ranged from 19.9% to 39.1% in the Pre-Q and 43.6% to 94.1% in the Post-Q. Top 200 II responses ranged from 0% to 61.7% in the Pre-Q and 22.8% to 96.7% in the Post-Q. In both courses, the majority of students strongly agreed or agreed that drug knowledge gained would be applicable to future coursework (78% Post-Q Top 200 I, 83.1% Post-Q Top 200 II). Implications: Assessment of the redesigned Top 200 course series through questionnaire responses indicates increased student perceptions in meeting objectives and acknowledgement of benefits to future coursework from Pre-Q to Post-Q. Student feedback will be utilized to guide future course modifications.

Student Pharmacists’ Study Strategies and Intentions to Change Study Habits. Jaclyn R. Myers, Kimberly S. Plake, Purdue University. Objectives: The objectives of this study are to describe student pharmacists’ study habits and their intentions towards changing their study habits. Method: First professional year student pharmacists (N = 153) were invited to complete a self-administered survey on study habits and strategies at the beginning of the fall semester. The survey instrument consisted of three parts, including: 1) descriptions of current study habits (21 Likert scale items; 1 = never, 5 = all the time), 2) intentions to change study strategies (15 Likert scale items; 1 = strongly disagree, 5 = strongly agree), and 3) demographics (5 items). Descriptive statistics were performed. Independent T-tests, ANOVA, Mann-Whitney and Kruskal-Wallis tests were conducted for demographic comparisons based on the type of data. Results: The response rate was 70%. The most frequently utilized study strategies by student pharmacists were: re-reading lecture notes (4.42 ± 0.74), completing assigned practice problems (4.34 ± 0.84), and highlighting or underlining lecture notes (3.75 ± 1.2). The least frequently utilized study strategies by student pharmacists were: using online study tools (2.26 ± 1.1), taking self-created practice tests (2.11 ± 1.2), and building 3D models or structures (1.69 ± 0.87). Overall, student pharmacists were ambivalent about their intentions to change study habits in the upcoming semester. Statistically significant differences were identified based on age, sex, and ethnicity. Implications: Although student pharmacists commonly use study methods that are cited as ineffective in the literature (re-reading, highlighting, and underlining), the majority do not intend to change their study habits in the first year of the professional program. The data warrant further exploration in order to identify areas for intervention.

Teaching Social Determinants of Health through Participatory Education: A Pilot Evaluation of Game-Play in Pharmacy Education. Oscar W. Garza, University of Minnesota, Chrystian Pereira, University of Minnesota. Objectives: To assess the impact of participating in an educational game of the social determinants of health on student pharmacist empathy and perceived self-efficacy of cross-cultural provider-patient skills. Method: A participatory education tool was integrated into a first-year required course to increase recognition of...
disparities and inequities in access to quality care. Impact was assessed using a quasi-experimental design consisting of a pre and post-game 27-item instrument. The instrument consisted of a 15-item assessment of cognitive and affective empathy and a 12-item assessment of perceived self-efficacy of cross-cultural provider-patient skills. Results: Pre-game (n = 146) and post-game (n = 107) surveys were analyzed. The 15-item assessment of empathy was found to be a reliable measure for the pre and post-game tests (Cronbach’s alpha of 0.82 & 0.84). The 12-item assessment of perceived confidence demonstrating awareness and knowledge of cultural difference and cross-cultural communication skills was found to be a reliable measure for the pre and post-game tests (Cronbach’s alpha of 0.91 & 0.91). Analyses of individual instrument items revealed that scores for 5 items measuring perceived self-efficacy of cross-cultural provider-patient skills increased significantly from pre-game to post-game (paired t-test; p<0.05). Implications: Improving perceived confidence has been shown as a key indicator for promoting behavior change and thus may contribute to the development of culturally-competent pharmacy practitioners. Assessment results suggest that a participatory educational tool, such as the game on social determinants of health, positively impacts aspects of student pharmacist self-efficacy for demonstrating awareness and knowledge of cultural difference and cross-cultural communication skills.

The Effect of Diversity Initiatives on Student Leadership Engagement. Jessica M. Greene, University of North Carolina at Chapel Hill, Carla Y. White, University of North Carolina at Chapel Hill, Victoria Hammett, University of North Carolina at Chapel Hill. Objectives: To examine the effect of prospective student diversity programming involvement on leadership engagement Method: A three-tiered program approach was conceptualized, designed and developed to facilitate recruitment of diverse students and to provide a pathway for leadership development opportunities prior to and through pharmacy school. The Leadership, Excellence, and Development (LEAD) Program is a one day program offered at the high school, college, and post graduate levels to bring exposure to pharmacy and pharmacy leadership. The Leadership Academy (LA) is held over a four-month period and provides leadership skill development through seminar series, activities, and projects. Mentoring Future Leaders in Pharmacy (M-FLIP) facilitates mentored leadership and guidance through professional relationships with student pharmacists. Leadership trends were assessed using membership records for LEAD, LA, and M-FLIP and Pharmacy Student Organization Leaders data obtained from student services. Results: Between 2011 and 2014, 134 students who were involved in the LEAD, LA, or M-FLIP prior to admission matriculated to the UNC Eshelman School of Pharmacy. Twenty-one undertook leadership roles within LEAD, LA, or M-FLIP. Of this cohort, four held concurrent leadership positions in multiple co-curricular activities. Ninety sought leadership in other student organizations and fourteen were from underrepresented backgrounds. Implications: Exposure and engagement in extensive leadership and innovative diversity programming may have a significant role in leadership interest and preparation prior to admission. Utilizing diversity initiatives may increase leadership opportunities for diverse students within pharmacy schools, which could ultimately influence the diversity among those who pursue leadership roles in the profession.

The Historical Events Upon Which U.S. Pharmacy Schools were Founded. David M. Baker, Western New England University, Uyen P. Nguyen, Western New England University. Objectives: Study objectives were: determine the event associated with individual schools’ founding dates, analyze if certain founding events are common among different schools, and determine if the pharmacy schools’ founding events trended over time. Method: An online survey was developed and emailed to all U.S. pharmacy school Deans, requesting demographic data, their founding date and founding event. Second and third emails were sent every two weeks to nonrespondents. Responses were analyzed to determine events used to establish founding dates and patterns among schools regarding their founding events over time. Results: 101 of 128 schools (78.9%) responded. The most common event overall was “date school was legally formed” (41.6%), with “date first dean was hired” a distant second (17.8%). Schools founded from 1993 to 2013 reversed the prevalence of the top two events (34.8% versus 37.2%) compared to schools founded prior to 1993 (46.5% versus 3.4%). Private schools narrowed the gap between the top two events (38% versus 30%), while public schools widened it (45.1% versus 5.9%), placing “date students first attended classes” second (13.7%). Small schools (<100/class) narrowed the gap between the top two (37% versus 27.8%) while larger schools widened the gap (46.8% versus 6.4%), placing “date students first attended classes” second (17%). Implications: The founding event paradigm has changed; since 1993, new schools are tending toward “date first dean was hired,” contrasting with the pre-1993 common event used: “date school was legally formed.” A review of history and the changing paradigm may prove useful to new schools in establishing their founding dates.

The Validation and Use of a Multiple-Choice Test to Determine Students’ Research Methods Knowledge. Jill M. Augustine, The University of Arizona, Marion K. Slack, The University of Arizona, Alejandra Aguilar, The University of Arizona, Terri L. Warholak, The University of Arizona. Objectives: To examine the impact of student pharmacist characteristics on knowledge of research methods from pre-test to post-test. Method: This pre-post project analyzed students’ knowledge change for a Research Methods course and if baseline characteristics impacted scores. Test structure included an abstract from the peer-reviewed literature followed by twenty-five multiple-choice questions. Six questions assessed baseline characteristics: 1- previous exposure to a research; 2-previous statistics courses; 3-previous experience conducting research; 4-education level before pharmacy school; 5-English as a second language; and 6- course attendance. Rasch analysis was used to calculate scores and compare pre- and post-test scores. Linear regression was used to determine if any characteristic impacted students’ scores. Results: Sixty-three students completed the pre-post-test. The majority of students were English native speakers (n = 50, 79.4%), inexperienced with conducting research (n = 39, 61.9%) or taking a research methods course (n = 37, 58.7%), completed a statistics course (n = 50, 79.4%), missed 1-3 classes over the semester (n = 33, 53.2%), and held a Bachelor’s degree prior to pharmacy school (n = 31, 50.8%). The mean percent correct on was 49.6% (SD 18.0) and 67.5% (SD 20.5) on the pre- and post-tests respectively. Student scores improved from pre- to post-test (p<0.001). Students experience conducting research impacted their pre-test score (coefficient=-1.95, CI: -3.88 – -0.02). No characteristics significantly impacted post-test scores. Implications: Results indicated that students learned about research methods. Previous experience conducting research significantly impacted students’ scores on the pre-test. Student characteristics may influence their knowledge at the beginning of a course, but showed no influence on knowledge gained over the semester.

Tree-Based Claims Algorithm for Measuring Pre-Treatment Quality of Care in Medicare Disabled Hepatitis C Patients. Viktor V. Chirikov, University of Maryland, Fadia T. Shaya, University of Maryland, Eberechukwu Onukwugha, University of Maryland, C. Daniel Mullins, University of Maryland, Susan dosReis, University
Objectives: To develop quality of care (QC) metrics using claims data in hepatitis C (HCV) Medicare patients with disability and quantify their correlation with peg-interferon receipt. Method: We adapted 14 Veterans Affairs-developed quality metrics (QM) for measurement in a cohort of 1,936 disabled HCV patients (2006-2009) with 6 months continuous Medicare parts A, B, D enrollment before diagnosis. The proposed algorithm was based on a random forest machine learning approach defining QC patient groups with highest probability of treatment receipt. Using linked county-level data from the Area Health Resource Files, contextual characteristics were compared across QC groups. Results: The five strongest predictors of treatment included “having received liver biopsy”, “HCV genotype testing”, “visit to specialist”, “confirmation of HCV viremia”, and “iron overload testing”. High QC (n = 360; proportion treated = 33.3%) was defined for patients who had at least 2 from the abovementioned metrics. Good QC patients (n = 302; 12.3%) had either “HCV genotype testing” or “visit to specialist”, while fair QC (n = 282; 7.1%) only had “confirmation of viremia”. Patients with low QC (n = 992; 2.5%) had none of the selected QMs. Compared to those with fair or low QC, more high and good QC patients lived in rural or small town areas with lower access to specialized hospital and physician services and lower rates of insurance and education. Implications: Higher quality was associated with higher treatment rates. Limited access to healthcare services among Medicare disabled patients with HCV did not correlate with lower QC. Future research is needed to assess QM with newer HCV treatments.

Trends in Psychiatric Emergency Department Visits among Medicaid-Insured Youth. Tomofa Asempa, University of Maryland, Mehmet Burcu, University of Maryland, Julie Magno Zito, University of Maryland. Objectives: Over the past two decades, the expanded use of psychotrópic medications particularly among Medicaid-insured youth has been profound. However, patterns of emergency department (ED) use among Medicaid-insured youth due to psychiatric reasons are largely unknown. We assessed the recent trends of psychiatric and non-psychiatric ED use among Medicaid-insured youth. Method: Repeated cross-sectional design was applied to administrative claims data for Medicaid-insured youth in a mid-Atlantic state for calendar years 2007 through 2012. Trends in annual prevalence of psychiatric and non-psychiatric ED visits were examined across 6 years by Medicaid-eligibility category [income-eligible youth, youth with disabilities (Supplemental Security Income), and foster care youth] as well as by age, gender, and race/ethnicity. In addition, we listed the leading psychiatric and non-psychiatric diagnostic groups most commonly reported in youth ED visits. Results: Study population was largely African American, and Medicaid eligible due to low-family income. From 2007 to 2012, there was a >10.0% increase in the annual rate of psychiatric-ED visits (1.2% to 1.4%), most notably for foster care youth (32.0% increase from 4.7% to 6.2%). However, across 6 years, non-psychiatric related ED visits remained relatively stable (29.1% to 30.6%) in total as well as by Medicaid-eligibility group. Depressive (34.2%) disorders, and injury/poisoning (24.0%) were, respectively, the leading diagnoses reported in psychiatric and non-psychiatric related ED visits. Implications: Increasing rates of psychiatric-related ED use, particularly among foster care youth, indicate a growing financial burden and may reflect gaps in the continuity of evidence-based care.

Understanding Conceptualizations of Mental Health among College Students. Benita A. Bamgbade, The University of Texas at Austin, Allison Lazard, The University of Texas at Austin Stian Richards School of Advertising and Public Relations, Carolyn M. Brown, The University of Texas at Austin. Objectives: The purpose of this project was to gain insight for how college students conceptualize mental health as the necessary first step in designing messages that could decrease mental illness (MI) stigma on campus. Method: In-depth semi-structured interviews (n = 17) were conducted using social representations theory to investigate mental representations of MI among college students, including pharmacy students. Participants drew images or words that came to mind regarding the term “mental health” and were then asked to elaborate on these first associations. Results: MI was defined differently among participants. While some commonly identified depression, and schizophrenia as MI, others were either unsure of what MI meant or misidentified autism, and Alzheimer’s disease as a MI. When considering MI among college students, participants believed stress and anxiety were the biggest problems among college students. Yet despite its frequency, participants expressed students’ hesitation to seek help. Participants anchored mental illnesses to treatable physical diseases, believing that similarly MI could be treated. They cited media, specifically movies and prescription drug commercials, as a place where they see messages about MI. Implications: This study identified some ways that students conceptualize – by anchoring and objectifying – mental health to form mental representations of MI. These findings represent a critical first step in the development of a communication campaign that will be used to design and test messages that strive to help eliminate barriers to mental health treatment among college students.

Use of Discriminatory Validity, Test Content Validity, and Difficulty Indices to Determine Test Question Appropriateness. Mark E. Patterson, University of Missouri-Kansas City, Jennifer Santee, University of Missouri - Kansas City, Karl Simon, Great Oak Pharmacy. Objectives: Although using the point biserial discrimination index (RPBI) is valuable in determining the validity of exam questions, omitting questions based upon low RPBI is problematic under scenarios where low RPBI questions simply reflect a ceiling effect of excellent student performance. Our objective is to illustrate the value of using the RPBI index in conjunction with difficulty indices and test content validity to determine the appropriateness of multiple choice questions. Method: Point biserial correlations were collected on 132 multiple choice questions (MCQs) from a pharmacoeconomics course. MCQs with RPBI's below 0.25 were defined as having low discriminatory validity. MCQs having less than 45% of the students answering correctly were defined as having high difficulty. MCQs not matching with course objectives were defined as having low content validity. Questions were further classified into those with 1) high difficulty and low discriminatory validity, 2) low content validity, or 3) low content validity, low discriminate validity and high difficulty. Results: Overall, 9 questions were high difficulty and 71 had low discriminatory validity. Four questions were both high difficulty and low validity, ten questions had low content validity, and only 1 question was flagged for low content validity, low discriminatory validity and high difficulty. Implications: These differences illustrate the potential risk of misclassifying a question as either valid or invalid by examining only one dimension of validity. Results underscore the importance of assessing content validity, discriminatory validity and difficulty level together instead of in isolation when determining the validity of a multiple choice question.

Voluntary Leadership Development Sessions Designed to Document Student Perceptions, Motivations, Experiences, and Goals. Kerry K. Fierke, University of Minnesota, Anthony W. Olson, University of Minnesota. Objectives: A personal leadership development pharmacy student focus group was designed and offered once a semester over three years (six times total). One objective was to provide
opportunities for students to reflect on their personal and leadership related perceptions, motivations, experiences, and goals. A secondary objective was to identify the unique needs and goals of the class to provide a better and more effective educational experience. **Method:** Student attendance for each one-hour session was voluntary. Sessions were conducted in small groups of no more than ten students to create an intimate and open environment facilitated by the faculty advisor. Each student submitted responses to two to four open-ended questions generated to document perceptions, motivations, experiences, and goals. Student attendance and question responses were recorded and analyzed for overarching themes. **Results:** Over two-thirds of the Class of 2015 on the Duluth campus attended five or more of the six voluntary sessions offered. The overall class participation rate per capita was greater than 77% of the 53 students who were enrolled on campus during each offering. Students described the type of leader they aspired and goals they wanted to accomplish during their time in the program. Commons responses referenced a desire to use their “scientific and medical knowledge” (67.3%), “help people” (63.5%), and “make a difference” (40.4%). **Implications:** The high rate of student voluntary attendance amongst the rigorous academic, work, and life demands over the course of three years implies the value of these sessions.

**Writing to Learn: Evolution of Journal Assignments in a Professional Communication Course.** Lisa L. Venuti, University of Montana, Jean T. Carter, University of Montana. **Objectives:** Review 10 years of data related to journal assignments used in a P2 professional communications course to identify trends in topic selection, instructor grading methods, and student feedback. **Method:** Between 2005 and 2014 two instructors used journaling to elicit students’ reactions and their exploration of ideas related to communication and socio-behavioral issues. Lists of topics, instructors’ methods, and student feedback from 2005 through 2014 were used to track changes. Both instructors emphasized using writing to learn and reflect. Journals were graded on content not grammar; each class enrolled 65 students. **Results:** In 2005, journal questions relating to that day’s lecture topic were primarily assigned by the instructor. By 2014, more flexibility had been introduced, and students were allowed to reflect on any aspect of that day’s lecture topic. Some of the original journal topics retained were reactions to an assigned book by Anne Fadiman and to various speakers addressing cultural diversity and personal healthcare related experiences. Journal assignments that were dropped included a compliance exercise. Topics tied to lectures also varied slightly from year-to-year. Student feedback regarding the journals remained unchanged over 10 years and was mostly positive. The poster will provide more detail on previous and current topics and students’ comments about the journals. **Implications:** Writing can be a powerful tool for learning and a safe method for expressing opinions or ideas. Journals, a personal form of communication with the instructor, seemed to allow students to express themselves freely. Options for introducing electronic journals are being explored.

**Theoretical Models**

**Developing Inter-Professional Clinical Practice Experiences for the Delivery of Culturally Competent Services to Underserved Communities.** Margarita Echeverri, Xavier University of Louisiana, William R. Kirchain, Xavier University of Louisiana, Ieanyichukwu O. Onor, Xavier University of Louisiana. **Objectives:** To develop real life opportunities for pharmacy students to practice their cultural competence and inter-professional skills. **Method:** Two Clinical Practice Experiences (CPEs) were created to provide students with experiences to work with inter-professional healthcare teams, cultural brokers, and interpreters in the delivery of healthcare services to Latino and Vietnamese underserved communities. The planning and implementation of the CPEs included event marketing, coordination of holistic and integrated healthcare services, creation of unified medical forms and consents, as well as implementation of training in unified health communications (cultural competence, health literacy, medical interpretation, and ethics) for pharmacy students, healthcare providers, and community volunteers. **Results:** A total of 96 pharmacy students working with 64 healthcare providers (physicians, nurses, ophthalmologists, dentists, social workers, and counselors) collaboratively provided integrated clinical services to 607 patients in both events. In summary, patients received blood pressure (460), glucose (390) and cholesterol (148) screenings performed by pharmacy students. Additionally, participants received general medical services (103) as well as HIV (37), dental (199), and vision (314) screenings which included prescription eyeglasses (252) hand-delivered for free. Both events included collaboration with 29 interpreters and 91 community volunteers, all working together to serve a diverse, multicultural, multilingual population using a holistic and culturally sensitive approach. **Implications:** According to students’ feedback & reflections, these CPEs have successfully provided them with experiences to practice their skills to deliver inter-professional, cultural competent services to the diverse underserved populations. The CPEs have been included as part of the Introductory Pharmacy Practice Experience (IPPE) curriculum.

**School Posters**

**A 4-Year Personal and Professional Development Course Sequence that Serves as Foundation for Co-Curricular Experiences.** Michelle Z. Farland, The University of Tennessee, Gailine McCaslin, Karen Whalen, University of Florida, Robin M. Li, University of Florida, William C. Mobley, University of Florida, Carol A. Motycka, University of Florida, Erin L. St. Onge, University of Florida, Thomas O. Munyer, University of Florida, Katherine L. Vogel Anderson, University of Florida, Teresa E. Roane, University of Florida, Anzeela Schentrup, University of Florida, Robert Navarro, University of Florida, Kristin W. Weitzel, University of Florida, Lisa Vandervoort, University of Florida, Diane E. Beck, University of Florida. In fall 2012, UF College of Pharmacy implemented a Mentor/Career Coach program that linked individual students to a pharmacist practitioner for career planning and other aspects of personal and professional development (PPD). Central to this student/pharmacist relationship are twice a year meetings with the Mentor/Career Coach, where the student’s PPD portfolio is reviewed and assessed. Subsequently, a 4-year sequence of Personal and Professional Development (PPD) courses has been incorporated into a new curriculum that will be implemented in fall 2015. This course sequence is an expansion of the 2012 program that will focus on the development of outcomes in the CAPE Educational Outcomes Domains 3 and 4. In Year one, the PPD courses will provide students with the knowledge and skills that will lay the foundation for ongoing co-curricular activities across years 2-4 of the curriculum. The co-curriculum is orchestrated by the PPD course sequence. The PPD course sequence will include program assessment, plan, and related milestones are being developed by a Faculty Team. This Poster will summarize experiences since 2012, provide an overview of the PPD course sequence in the new curriculum, the co-curriculum, and the organizational structure that has been established for oversight.

**A CHARMing Method of Authentic Assessment.** Ashley N. Castleberry, University of Arkansas for Medical Sciences, Kathryn K. Neill, University of Arkansas for Medical Sciences, Nalin Payakachat, University of Arkansas for Medical Sciences, Cindy D. Stowe, Sullivan University. **Objective:** To globally assess students’ performance across
A Novel Mathematical Model for Determining Faculty Workload at California Northstate University College of Pharmacy. Leo Fitzpatrick, California Northstate University, Carol Millette-Snodgrass, California Northstate University, Eman Atif, California Northstate University, Shane P. Desselle, California Northstate University. Workload is a key factor in faculty satisfaction and retention at US pharmacy schools. Recently, a faculty committee at the California Northstate University College of Pharmacy (Elk Grove, CA) developed a novel mathematical model for determining faculty workload. This process, which was based on faculty input, took place from March to July of 2014. **Methods:** Faculty activities (hours per week) were first converted to activity scores by an interval scaling type of method. Using this data, our model calculated activity and weighted means in common faculty areas such as teaching, scholarship and service. Subsequently, total activity scores and percent total faculty activities were determined to create departmental and institutional workload models. **Results:** A total of 26 faculty responses were received; 8 from the biomedical sciences department and 18 from the clinical sciences department. The overall faculty response rate was 87%. For the biomedical sciences department, percent total faculty activity mean values and [95% C.I.] were as follows: 39% [30-48] for service, 34% [17-52] for teaching and 22% [13-30] for scholarship. Corresponding values in the clinical department were 24% [17-31], 39% [34-44] and 14% [8-20]. From this departmental data, an overall institutional workload model was determined containing these minimum and maximum faculty activity values: teaching [17-52%], service [17-48%] and scholarship [8-30%]. Summary: A novel faculty workload model was created to assess faculty activities at the California Northstate University College of Pharmacy. **Conclusion:** Administration at our institution is now utilizing this data to optimize faculty workload within the College of Pharmacy.

A Pedagogical Paradigm Shift at Washington State University. Jennifer D. Robinson, Washington State University; Brenda S. Bray, Washington State University; Connie M. Remsberg, Washington State University, Angela Stewart, Washington State University, Stuart J. Muller, Washington State University, Brian J. Gates, Washington State University, Linda G. MacLean, Washington State University. A common theme underpins many of the ACPE 2016 Standards; that the modern graduating pharmacist must be multi-dimensionally prepared. The de facto didactic teaching approach, the lecture, is poorly suited to teaching critical thinking and non-cognitive skills, while active and experiential learning is ideal. Though these latter elements are now incorporated into pharmacy programs, the classroom itself has yet to embrace these needs. With this in mind, the Washington State University College of Pharmacy (WSU COP) has committed to fundamentally transforming its didactic teaching model by taking a participatory, active learning approach in the classroom, delivered simultaneously by live faculty on two separate campuses. In adopting this model we also ensure that both main and extension campus students enjoy the same classroom experience, including the crucial presence of a professor in person for all lessons. Starting with the Doctor of Pharmacy Class of 2019, we will begin the process of embedding active learning in all our classrooms. Content that was previously provided via lecture will be provided to students for digestion prior to class, and our most critical pedagogical resource, contact time between professors and students, will be dedicated to diverse active learning activities. The approach will allow for improved cognitive development of our students, since class time will focus on higher order cognitive skills (analysis, synthesis, evaluation and creativity), in addition to their affective development through participation and experience (teamwork, leadership, communication, organization).
A Program for Continuing Professional Development to Assess and Confirm Achievement of Co-curricular Learning. Julie M. Sease, Presbyterian College, Laura M. Fox, Presbyterian College, Mandy L. McCaslin, Presbyterian College, Nancy H. Goodbar, Presbyterian College. Following release of the Accreditation Council for Pharmacy Education “Standards 2016” draft and dispatch of a contingency to the American Association of Colleges of Pharmacy Institute 2014, the Presbyterian College School of Pharmacy (PCSP) convened an ad hoc Student Development Committee (SDC) including representation from the administration, faculty, staff and study body. The committee was charged with determining whether non-cognitive domains of the Center for the Advancement of Pharmacy Education Outcomes 2013 (specifically 3.5 Cultural Sensitivity, 4.1 Self-awareness, 4.2 Leadership, and 4.3 Innovation and Entrepreneurship) should be fulfilled by PCSP students via curricular or co-curricular requirements. The committee was also charged to develop co-curricular requirements and plan for assessment of the co-curricular requirements. The SDC began by assessing the curricular inclusion of the targeted non-cognitive domains by curricular mapping. Mapping proved cultural sensitivity was sufficiently covered and assessed within the curriculum and the SDC began revision of the program’s Growth and Assessment Portfolio as a means to assess the other three outcomes. Students work with their advisors yearly to create a plan for continuing professional development. Students choose from a menu of goals with at least one goal from each of the targeted areas of self-awareness, leadership, and innovation being chosen. A list of activities for each outcome, and the required number of learning activities, are provided. In order to progress to the next professional year, students must complete their goal setting, learning activities, and write a reflection which includes questions related to their growth in the three outcome areas.

A Survey-Based Approach to Curricular Mapping to Assess Breadth and Depth of Curricular Content. Lauren B. Angelo, Rosalind Franklin University of Medicine and Science, Marc S. Abel, Rosalind Franklin University of Medicine and Science, Sarah S. Garber, Rosalind Franklin University of Medicine and Science, David H.T. Harrison, Rosalind Franklin University of Medicine and Science, Renee Francisco, Rosalind Franklin University of Medicine and Science. Objective: Curricular mapping validates and assesses programmatic practices, curricular content, redundancy, and gaps. The College of Pharmacy at Rosalind Franklin University of Medicine and Science uses curricular mapping as an assessment strategy. The objectives of the College’s recent mapping process were two-fold: (1) to map each course objective to the CAPE Educational Outcomes 2013, Appendix B in the ACPE standards, the Interprofessional Education Collaborative (IPEC) Core Competencies, and College Goals and (2) to identify the learning and assessment methods used for each course objective. Methods: To streamline data collection, a web-based survey using Qualtrics software was developed. For each course learning objective, applicable Appendix B and CAPE Outcomes elements were labeled as either “Introductory,” “Reinforcing,” or “Mastery.” Learning and assessment methodologies, IPEC competencies, and College Goals were selected as appropriate. Data collected using the survey were exported into Microsoft Excel for analysis. Results: This survey-based approach allowed the collection of a large amount of data covering the entire curriculum. Initial results indicate a progression from predominately “Introductory” elements in the P1 year to increasing numbers of “Reinforcing” and “Mastery” levels in P2 through P3 years. A broad distribution of learning and assessment methods was identified. Implications: Further analysis of these results will be used by the Curriculum and Assessment & Evaluation Committees to inform and improve the curriculum. The survey tool will be modified to allow mapping of course objectives to the elements from Appendix 1 of the ACPE Standards 2016.

ACPE 2016 Standards Implementation Project: Gap Analysis, Report, and Recommendations. David A. Getman, D’Youville College, Nicole E. Eckard, D’Youville College, Stacie J. Lampkin, D’Youville College, Kirsten Butterfoss, D’Youville College, John L. Koford, D’Youville College. Intent: The aim of this gap analysis, report, and recommendations endeavor has been to identify actions that our school should take to close the disparity between where we are now in addressing the ACPE 2007 Standards and where we need to be to address the newly adopted ACPE 2016 Standards, in terms that are more concrete and detailed to our administrators, faculty, staff, and students. Process: Gap analysis is the study of differences between two systems and involves five steps: (1) review system, (2) develop requirements, (3) comparison, (4) implications, and (5) recommendations. Outcomes: Recommendations fell into five principal themes: (1) benchmarking student performance to national samples, (2) assessing expanded outcomes associated with practice & care, and personal & professional development, (3) interprofessional education & pre-advanced pharmacy practice experiences, (4) expanded assessment of educational outcomes using student portfolio system, and (5) programmatic evaluation and educational assessment plan, and annual reports. Implications: The major barriers to our successful implementation of the new ACPE 2016 Standards will depend on creating a sense of urgency around the change we wanted to lead, selecting a guiding team to lead the change, and empowering other faculty, staff, and students to implement change by training them, removing obstacles, and aligning our assessment systems. The five themes are designed to facilitate planning and implementation of lasting, positive change. By incorporating several of these recommendations, the School may be in a better position to demonstrate resolution of many implementation/ assessment issues in a more proactive rather than reactive manner.

Advanced Pharmacy Practice Experience (APPE) Boot Camp Effectiveness in Preparing Pharmacy Students for Fourth Year. Regina A. Tabor, University of the Incarnate Word, Jeffrey T. Copeland, University of the Incarnate Word, Nicole C. Farrell, University of the Incarnate Word, Vanessa G. Phillips, University of the Incarnate Word, Tom Shank, Alejandra Zertuche, University of the Incarnate Word, Arcelia M. Johnson-Fannin, University of the Incarnate Word. Background: All students are required to complete APPE rotations. Feik School of Pharmacy requires attendance at an APPE boot camp as preparation for their APPE rotations. Knowledge and confidence are essential for transitioning from the classroom into their fourth year pharmacy clinical and dispensing roles. Objectives: This study was designed to analyze the effectiveness of an educational preparatory course (APPE Boot Camp) designed to prepare students for their clinical APPE rotations. Methods: Third year pharmacy students were given assessments before the program, at the end of the program, and two months after the APPE boot camp. All three assessments evaluated the same items of knowledge and confidence. The questions were developed by the Feik School of pharmacy faculty members who presented the APPE boot camp topics. Results: The students had a statistically significant 1.7 point improvement (pre- to post-test) in knowledge test scores (t-test, t = 7.5805, p < 0.0001, df = 79) and increases in their confidence scores. The students’ knowledge scores for the two-month post-test were significantly lower by 2.3 points compared with the first post-test (t-test, t = 6.5695, p < 0.0001, df = 59), but not different from the pre-boot camp test (t-test, t = 1.2120, p = 0.2306, df = 56). Conclusion: Providing the APPE boot camp
program initially prepares third year students for their clinical rotations by increasing their knowledge and confidence for the transition from the classroom to the clinical practice sites, but the increase was not maintained.

An Assessment Framework to Guide Annual Program Review. Fred Doloresco, University at Buffalo, The State University of New York, Nicole Paolini-Albanese, University at Buffalo, The State University of New York, Kathleen M. Boje, University at Buffalo, The State University of New York, Mary Wurm-Schaar, University at Buffalo, The State University of New York, William A. Prescott, University at Buffalo, The State University of New York. The University at Buffalo (UB) State University of New York School of Pharmacy and Pharmaceutical Sciences (SPPS) implemented a modified version of Nichols’ Five-Column Model as a framework for annual program review. Standardized course assessments, curricular review of courses, an in-depth review of courses deemed to be in need of peer-evaluation, and an annual report summarizing high-level direct and indirect measures which assess the program’s effectiveness are performed. This process engages faculty members and administrative faculty/staff and provides structure for examining relationships between stated program outcomes, intended and observed results, and ongoing quality improvement efforts. It requires examining the program’s core learning outcomes (patient/pharmaceutical care, medical and sciences foundations knowledge and skills, the ability to evaluate practice and care while promoting quality improvement, effective interpersonal and communication skills, professionalism, and systems-based practice and management), assessment methods, expected results/performance level, results, and action plan/s corresponding to the observed results. A variety of evaluation methods are used to assess outcomes, including internally and externally developed assessments that target cognitive, affective and psychomotor outcomes and assessments that provide information about broad-based program goals and offer unique benefits such as national benchmarking (e.g., the Pharmacy Curriculum Outcomes Assessment). Results are compared to internal and external benchmarks of student performance and perceptions of competency, allowing for the identification of areas for targeted quality improvement. The modified five-column model ensures that the relationship between the program’s intended and observed outcomes is prioritized and that the results of that comparison inform efforts to “close the loop”.

An Interprofessional Seminar Designed to Increase Awareness and Communication Skills among Allied Health Science Students. Melissa Shipp, Harding University, Sarah E. Griffin, Harding University, Debbie L. Waggner, Harding University. Objective: To demonstrate improvement in awareness and communication skills among interprofessional patient care teams by establishing foundational relationships through an interprofessional education seminar. Methods: Health sciences faculty from the following professions organized a case-based seminar using a simulated patient to increase interprofessional awareness and stimulate collaboration among students from each of their disciplines in preparing real-time, application-based patient care plans: counseling, communication sciences and disorders, dietetics, nursing, pharmacy, physical therapy, physician assistant, and social work. A total of 104 health science students completed a variation of the Interprofessional Education & Practice (IPEP) survey prior to, and at the conclusion of, an interprofessional seminar. A free response feedback questionnaire was distributed with the post survey. The seminar activities included an initial group interview with a “real” patient then progressed to random assignment of students to patient care teams. Faculty-facilitated discussion questions and a three-part patient case (emergency department, acute inpatient, and long-term rehabilitation care) guided the student teams to formulate patient care plans. All groups rejoined to conclude the evening with clinical pearls and final discussion points. Results: Overall, health science students correctly answered 62.2% of the survey questions prior to the seminar. Post-survey results showed a 5.35% increase in correct responses. This demonstrates desired improvement of awareness and communication skills among health science students at Harding University. The percent improvement may be slightly stunted due to attrition in all professions present, except dietetics and communication sciences and disorders.

Assessing Critical Thinking through Writing in a Three Calendar Year Pharmacy Curriculum. Doreen E. Soldato, University of Saint Joseph, Jennifer Luciano, University of Saint Joseph, Dayne A. Laskey, University of Saint Joseph. Introduction: Critical thinking and writing are vital components of pharmacy education. As such, the University of Saint Joseph School of Pharmacy has developed and implemented writing assignments designed to encourage critical thinking throughout all three calendar years of the curriculum. Methods: The P1 year assignment is a controversial paper requiring students to formulate an opinion, engage evidence using appropriate references, and weigh the value and validity of multiple perspectives within a complex topic. Students are encouraged to consider the implications and limitations of their own arguments to demonstrate the highest order of critical thinking. Subsequent assignments occur during the P2 and P3 years. All assignments are graded using a unified rubric developed by the University’s Interdisciplinary Writing and Reasoning Department which puts emphasis on critical thinking. Results: Data obtained from the first two years of writing assessment for the Class of 2016 has shown an increase in critical thinking scores from P1 to P2 year, an increase in the number of students passing the writing assignment on the first attempt, and an increase in average overall score on first attempt (72.6% vs 82.8%, p<0.001, paired t-test). Future Directions: Encouraging critical thinking in the P1 year prior to pharmacotherapy courses provides an opportunity for students to begin to reason through a complex topic before the evidence-based clinical reasoning that is needed in the P2 year. Future directions for development may be to incorporate critical thinking and writing skills among pharmacy students.

Assessing Development of Professional Competence Across the Curriculum through Capstone Cases. Kristine S. Schonder, University of Pittsburgh, Deanne L. Hall, University of Pittsburgh, Roberta M. Farrah, University of Pittsburgh, Christine M. Ruby-Scelsi, University of Pittsburgh, Neil J. Benedict, University of Pittsburgh, Carolyn T. Thorpe, University of Pittsburgh, Sandra L. Kane-Gill, University of Pittsburgh, Kim C. Coley, University of Pittsburgh, Susan M. Meyer, University of Pittsburgh. The University of Pittsburgh uses capstone cases in each term across the first three years of the curriculum to assess progressive development of professional skills. The capstone case assessments provide for cross-course integration of content and skills, are performance-based, and include simulated, face-to-face interprofessional interactions. Cases are directly related to the School’s curricular outcomes focused on critical thinking, development of knowledge and skills, communication skills, patient assessment, pharmaceutical care plan development, management, and decision making. Cases are deployed using standardized patients and standardized colleagues (physicians) to authenticate the experience. The assessment process uses rubrics that focus on progressive development and achievement of outcomes across the curriculum. Students must demonstrate a minimum level of competence in each aspect assessed by the capstone cases. Students not achieving the set benchmarks are provided...
Assessing Educational Outcomes through Composite Examinations. Sharon McDonough, The University of Tennessee, Jennifer S. Williams, The University of Tennessee, Marie A. Chisholm-Burns, The University of Tennessee, Stephanie J. Phelps, The University of Tennessee. Standard 24 of ACPE Standards 2016 directs colleges of pharmacy to implement plans to assess student attainment of educational outcomes to ensure graduates are prepared to enter practice. One of several ways the University of Tennessee Health Science Center College of Pharmacy accomplishes this task is through embedded outcomes assessment in a computerized examination. In Fall 2011, the College implemented a composite examination (CE) in the first 2.5 years of the curriculum, which covers the didactic portion of required courses. Implementation began with the Class of 2015 and continued as the class progressed in the curriculum. CEs are administered in computer laboratories on three campuses approximately every two weeks and consist of questions from required courses. Each course receives 3-4 questions per contact hour on each exam. The CE is administered using ExamSoft®, a testing software with capability to link test items to categories. The College’s student learning outcomes were entered into the program as categories, and each test item is linked to the corresponding outcome(s) as the exam is built. This process has allowed reports to be generated that track student achievement of the outcomes longitudinally. Reports may be accessed in aggregate or on the individual student level. Individual student reports provide formative feedback for students on their progress in achieving the outcomes and thereby support self-directed learning by allowing them to identify their own areas of proficiency as well as areas for improvement. The College uses the CE data to guide curricular changes for continuous programmatic improvement.

Assessment Upgrades and Pilot Programs Moving Towards ACPE standards 2016. Gerard G. D’Souza, MCPHS University–Boston, Anela Stanic, MCPHS University–Boston, Paul J. Kiritsy, MCPHS University–Boston, Andrew Szumita, MCPHS University–Boston, Lana Dvorkin-Camiel, MCPHS University–Boston, Matthew R. Machado, MCPHS University–Boston, Paul DiFrancesco, MCPHS University–Boston. In response to CE outcomes 2014 and in anticipation of ACPE standards 2016 MCPHS University School of Pharmacy Boston underwent a revision and restructuring of the core assessment plan. The scope and philosophy of the plan was updated to include new terminology and emerging practices while streamlining existing elements. Particular attention was paid to establishing a robust feedback loop for assessment driven change in school operations. A major outcome of the reorganization was the identification of areas of potential compliance and non-compliance with Standards 2016. Interprofessional education (IPE) emerged as the major area of focus for further development. The first step towards development of IPE initiatives was a comprehensive curricular mapping to CAPE 2014 outcomes. The curricular mapping exercise identified areas of the curriculum amenable to the incorporation of IPE. Existing IPE activities across the curriculum were documented and evaluated in an effort to identify activities limited to specific subsets of a PharmD class that could be scaled up to include the entire class. Pilot programs of new IPE activities have also been initiated to explore feasibility and streamline assessment tools to allow rational implementation of additional IPE components into the curriculum over the next academic year. The pilot programs have been selected to foster collaboration with other schools of health professions within MCPHS University as well schools outside the University. Specific elements of the assessment plan as well as tools and details of activities will be included in the school poster.

Building Interprofessional Communication Skills and Stimulating Cultural Change to Optimize Patient Safety. Mark T. Holdsworth, The University of New Mexico, Kristina M. Wittstrom, The University of New Mexico, Michel B. Disco, The University of New Mexico, Cynthia Arndell, UNM Health Sciences Center, Mark Rolfson UNM Hospital. Communication failures within healthcare are a major cause of medical errors and negative health outcomes. The Crew Resource Management communication model is aimed at optimizing patient outcomes by improving communication and teamwork among healthcare professionals. While the model has proven effectiveness in clinical practice, there are few reports to indicate its application and effectiveness in pre-clinical interprofessional education. At the UNM HSC, we are piloting Crew Resource Management training (Lobo Wings activity) which includes two hundred medical, nursing and pharmacy students, divided into teams across disciplines, to participate in a 4 hour session. Students will practice interprofessional collaborative communication skills as they examine methods of improving patient safety and quality outcomes. The activity is modeled on successful team based communication in highly reliable organizations (e.g. aviation). A pre-survey will collect demographics, assess patient safety fluency as well as evaluate participant perceptions as to the value of a team approach to addressing patient safety and quality issues. A post-survey will be administered to assess changes in attitudes and/or knowledge after the training. Representative student groups and faculty facilitators will debrief to explore observed successes and challenges to inform future interprofessional student patient safety learning experiences. Pharmacy student participants will also be required to submit a reflective essay describing their perceived value of this experience.

Co-curricular Activity to Enhance Patient Assessment and Pharmacy-Physician Assistant (PA) Telephonic Interaction. Gamal I. Hussein, South College, Kimberly Lay, South College. Objectives: Design and implement a co-curricular activity to enhance students practice in ambulatory care setting through telephonic interactions with prescribers while assessing virtual patient cases. Methods: Teams of 2-3 pharmacy students were provided access to a profile of virtual patients and received related telephonic prescriptions from teams of 4-5 PA students. Discussion topics included prescription orders, patient conditions, and clinical response. PA students’ main responsibilities included diagnosis, ordering related laboratory tests, and prescription writing/communication. Pharmacy students’ main responsibilities included prescription assessment/medication management, and communication. Telephonic interactions, discussing 2-4 cases, were conducted over one hour each week and were followed by a group discussion. A student survey was completed to assess perception and abilities using the Readiness for Interprofessional Learning Scale (RIPLS). Additional objectives were also evaluated. Results and Implications: A total of 27 virtual patient profiles were designed and 151 students spent 8 hours of assessment/telephonic interactions. A total of 143 students (94.7%) completed a five point
Likert scale survey. The majority of students described the approach to be innovative (87.4%) and a favorable response of 4.0 or above was reported in 22 (81.5%) of the questions. Students reported benefits of this activity with regard to its impact on the 4 subscales (Teamwork & collaboration, Negative professional ID, positive professional ID, and Roles & Responsibility) of the RIPLS survey. Higher scores were reported for the activity’s enhancement of student-student and student-content interactions as compared to student-faculty interaction. Areas for improvement included enhancement of pharmacy response time and instructors’ feedback.

Compliance with Standard 11: A Longitudinal Incorporation of Interprofessional Education into an Accelerated Pharmacy Program. Sheila Seed, MCPHS University–Worcester/Manchester, Kara Bonaceto, MCPHS University–Worcester/Manchester, Maryann Cooper, MCPHS University–Worcester/Manchester, Jennifer L. Donovan, MCPHS University–Worcester/Manchester, Kaelen C. Duncan, MCPHS University–Worcester/Manchester, Carroll Ann W. Goldsmith, MCPHS University–Worcester/Manchester, Abir Kanaan, MCPHS University–Worcester/Manchester, Anna K. Morin, MCPHS University–Worcester/Manchester, Karyn M. Sullivan, MCPHS University–Worcester/Manchester, Michael J. Malloy, MCPHS University–Worcester/Manchester. The 2016 ACPE Standard 11 specifically addresses interprofessional education (IPE). MCPHS University specializes in the education of healthcare professionals in various fields. At the School of Pharmacy Worcester/Manchester, a culture of IPE has been adopted to prepare our students to be competent members of the healthcare team. An IPE committee was formed to ensure the curriculum prepared our students to be contributory members of healthcare teams. The charge of this committee was to ensure that IPE activities occurred longitudinally throughout the curriculum, had both didactic and experiential elements, addressed all four core competency domains of IPE (values/ethics for practice, roles/responsibilities, interprofessional communication, teams/teamwork), and had minimal curricular redundancy. The ultimate goal of IPE in the curriculum is for students to work together to provide more effective and safer patient-centered care. The committee developed a working definition for an IPE activity; this included: students or healthcare providers from >2 different health professions; the activity links to >1 IPE domain(s), is interactive, and may contain a reflection. IPE activities have been incorporated throughout the required pharmacy curriculum and have included students and faculty members from other healthcare disciplines, such as nursing, physician assistant studies, dental hygiene and physical therapy. Assessment utilized student self-reflection and presentation grading rubrics. A tool has been developed to document IPE experiences during rotations, allowing for student self-reflection and providing a means to record and capture experiences. This pilot program began January 2015; full implementation is expected next academic year for students completing IPPE and APPE rotations.

Continuous Professional Development (CPD) Course Implementation–Engaging Students in Portfolio Building and Reflective Thinking. Erin L. Johanson, Roseman University of Health Sciences, Elizabeth J. Unni, Roseman University of Health Sciences, Alana Whittaker, Roseman University of Health Sciences. Introduction & Objectives: ACPE CPD Pilots defined Continued Professional Development (CPD) as a “self-directed, ongoing, systematic and outcomes-focused approach to learning and professional development.” The CPD course was created to help meet 2016 ACPE Draft Standards 4 – Personal and Professional Development, 15.4 – Advising and CAPE Outcomes 2013 Domain 4. The practices of cyclical reflection, planning, learning, and evaluation benefit both student learning and accreditation compliance. Roseman University College of Pharmacy implemented the CPD course in Fall 2014 for first year PharmD student. The course objectives included goal development, writing specific and measurable objectives, resume/cv creation, career exploration, and personal and professional reflection, along with mentoring from assigned faculty members. Methods: Students were randomly divided into small groups of 7 or 8, and each group was assigned a faculty mentor. Orientation and online resources were provided to guide the experience in addition to didactic classes and ongoing guidance from their faculty mentor. Students were required to create an online portfolio based on course objectives and write reflection papers over the year. Faculty mentors graded the assignments using the rubric provided and offered opportunities for remediation. Results: Qualitative and quantitative feedback was gathered from faculty and students about their experience with the course including recommendations to improve the course. Results will help the course coordinators improve the course and extend it to second year PharmD students. The results will also assist schools interested in developing CPD course navigate the way through the development and implementation of a longitudinal professional development course.

Continuous Professional Development: A Longitudinal Course Approach. Janet K. Astle, Duquesne University, Riccardo L. Boni, Duquesne University, Patricia A. Keys, Duquesne University, Christine O’Neil, Duquesne University, Monica L. Skomo, Duquesne University. Background: Continuous Professional Development (CPD) is a longitudinal series of courses delivered in each semester of the professional phase of the curriculum. Course pillars consist of professional development, career exploration, self-directed learning, and the enhancement of writing skills. CPD is designed to meet ACPE Standards 2016. Description: CPD meets five times each semester in the first three years of the professional phase of the curriculum. Fourth professional year students meet at the end of each five-week experiential education rotation in a forum that mimics a professional conference. Course concepts are accompanied by in-class discussion and active learning exercises. Select course learning objectives are further linked to integrated lab experiences for additional topic exploration. A required advocacy class trip to Washington, D.C. is a requisite component of CPD. Assessment: At the conclusion of each class session, students are prompted to complete an out-of-class assignment. These assignments include reflections that are guided by a series of prompts, learning gap analyses, and development of a personalized learning plan that become part of a student portfolio. Evaluators assess student submissions on a four-point Likert scale by using a defined rubric. Assessment scores are linked to School of Pharmacy competency statements through a web-based software program. Implications: Preliminary programmatic data suggests that areas requiring additional attention include writing skill development, task completion, and prioritization. Individualized student reports can also be provided to faculty mentors for formative feedback purposes. An upsurge in voluntary student legislative advocacy initiatives has been observed following implementation of the CPD courses.

Creating a Culture of Professional Development at Ferris State University College of Pharmacy. Katie L. Axford, Ferris State University, Jennifer Lamberts, Ferris State University, Eric Nybo, Ferris State University, Mandy R. Seiferlein, Ferris State University, Kali Vanlangen, Ferris State University. Ferris State University College of Pharmacy (FSUCOP) is committed to facilitating personal and professional development to meet the demands of a dynamic curriculum and profession. In pursuit of this mission, the College maintains a standing Professional Development committee (PDC) charged with facilitating programming based on needs assessments of College faculty, staff, and preceptors. Historically, PDC-sponsored programming has included teaching, scholarship, and personal development topics.
In Spring 2013, the PDC began Gallup’s strengths-based philosophy programming and has since funded the establishment of the Strengths Core Team. Focusing initially on faculty and staff, this team will also develop programming for students, recognizing the importance of self-awareness of strengths as a foundation for leadership development. Additionally, the PDC is piloting a program aimed at incentivizing faculty to pursue continuing professional development. Following participation in PDC-sponsored programming, faculty are required to complete an evaluation survey and score at least 70% on a summative assessment to earn professional development “credits”. Faculty who accumulate a designated number of credits receive a monetary contribution to their individual professional development budget. These monies can be used for travel to professional meetings or purchase of resources to enable efforts to improve teaching and student learning. Following a successful pilot, this will be expanded into an ongoing, year-long program. In light of the emphasis placed on personal and professional development in ACPE Standards 2016, FSUCOP will continue to dedicate resources to providing and promoting programming to help faculty, staff, and students enhance their skills, productivity, and leadership within the profession.

Creation of a Student Driven, Co-Curricular, Interprofessional, Open Access Multimedia Healthcare Review at Butler University. Erin L. Albert, Butler University, Mary H. Andritz-Graham, Butler University. To address the newer demands of ACPE 2016, particularly Standard 4 (self-awareness, leadership, innovation/entrepreneurship and professionalism), we created a new co-curricular opportunity for our best writers at Butler University. BU Well is an open-access multimedia journal that was founded by the Butler University College of Pharmacy and Health Sciences (BUCOPHS) in 2014 through a Butler University Innovation Grant. We identified the top writers in COPHS via CAT writing scores in the P1-P3 classes, and then invited top writing students to learn more about this co-curricular opportunity in fall 2014. Over thirty students signed up to participate in a 1 credit hour independent study course in spring 2015. This scientific journal will be published annually in a volume per year, and BU Well will be edited in full, and written in part by Butler University students, similar to the law review model at schools of law. The thirty students participating in spring 2015 via an independent study course are developing the journal’s policies, procedures, bylaws and promotion. The following methods of assessment were utilized: regular meeting immediate feedback, midterm oral examination, online didactic content, quizzes, peer review, written reflections on the experience, and final formal presentations on policies and procedures for the journal. Beginning fall 2015 the first volume of the journal will be developed with an interprofessional team of students and faculty, published by summer 2016. Other standards this project addresses within ACPE 2016 include: 9.1, 12.3, professional communication (Appendix 1), and interprofessional interaction (Appendix 2).

Curricular Revision in the Face of ACPE Standards 2016. Justine S. Gortney, Wayne State University, Lynette R. Moser, Wayne State University, Candice L. Garwood, Wayne State University, Brian L. Crabtree, Wayne State University, Richard L. Slaughter, Wayne State University, Hanley N. Abramson, Wayne State University. The Curricular Renewal Subcommittee at Wayne State was tasked with revising the curriculum in light of changes to pre-requisite requirements, the 2016 ACPE standards, and changes in higher education and the healthcare environment. Assessment of the current curriculum started the process. Three sources of data were evaluated: 1) Internal assessments (AACP graduating student, preceptor, and faculty surveys, PCOA results of P2 and P3 students for 2 years, experiential assessment, student self-assessment of the current ability based outcomes, faculty “blue sky” interviews, graduating student focus groups, the curricular map, NAPLEX scores, and MJPE scores); 2) External stakeholder interviews, 3) Review of the education and healthcare environment (including the ACPE 2016 Draft Standards and literature review of white papers from the major pharmacy organizations and healthcare and education policy makers). Assessments were triangulated to identify the areas of strength and needed improvements in the program. Areas for improvement identified included improving connectedness of curriculum, increasing active learning and critical thinking, and increasing emphasis on communication skills. Additionally, specific content and emphasis were identified within each of the course sequences. Electives options, research experiences, and interprofessional education required enhancements. A small faculty group developed a new curricular template at the 2014 AACP Institute that addressed each of the areas for improvement. All faculty participated in 2 working retreats to provide input into the specific course content within their areas of expertise. A renewed curriculum has been approved with formative and summative curricular assessments included.

Curricular Transformation to Build Beyond the 2016 Standards and Guidelines. David F. Gregory, The University of Mississippi, Alicia S. Boulld, The University of Mississippi, Kristopher Harrell, The University of Mississippi, David D. Allen, The University of Mississippi. Objectives: The advent of ACPE Standards 2016 offered opportunity for a comprehensive evaluation of our curriculum to explore optimal methods for incorporating the updated revisions throughout the program. We plan to judiciously modify the curriculum beyond a simple “revision,” instead transforming it to sustainably reflect an advancing profession. Method: Initial engagement of the faculty occurred at the School’s annual retreat, focusing on essential criteria deemed most important to form the foundation of our new curriculum. The theme that was espoused and reinforced was “starting with a blank canvas,” encouraging thinking that was not limited to our existing course structure. A curriculum transformation committee (selected faculty, administrators, and students) reviewed best practices at other institutions, evaluated the current literature in health professions education, and determined the critical competencies for our graduates. The Board of Visitors were consulted for their perspectives. Results: In the first year, the committee worked to develop crucial deliverables. Goals for integration levels were established, along with core competencies and the abilities to meet those stated competencies. Faculty were engaged to serve as content experts, a role viewed as critical. It remains evident that the valuable asset of faculty involvement requires multiple avenues of communication to secure continued and active participation in the overall process. Implications: A curricular process that incorporates the aspects of the 2016 ACPE Standards, building upon the perceived intent and excelling beyond that level is more likely to produce pharmacy practitioners that can advance our profession in the exciting years ahead.

Developing Instructional Assessment in Pharmacy & Health Sciences Education: An Evidence-Based Approach to Professional Development. Roddick D. Jones, Texas Southern University, Edward C. Stemley, Texas Southern University. An accurate understanding of teaching effectiveness is required for colleges to evaluate the learning environment and to substantiate academic and institutional performance. Recent studies reveal that teacher evaluations are increasingly relying on student performance measures. Yet, none of the student performance assessments were designed to measure effective instruction. These evaluations were developed to measure students’ achievement levels against accreditation standards and/or other students. The
objective of this study is to implement and examine a process for evaluating teaching at the Texas Southern University College of Pharmacy and Health Sciences (COPHS). In the absence of a formal college-wide instructional assessment program, the COPHS have developed a comprehensive process for measuring teaching effectiveness. The process provides a foundation for ongoing assessments and development of faculty through student-centered learning strategies. The college anticipates improving cognitive learning through this continuum of trainings and measurements of instructional quality. Preliminary results have shown inconsistencies among annual faculty and student evaluation ratings. The study also reveals structural programmatic implications on data outcomes. A conceptual model facilitates implementation of an evidence-based process for evaluating teaching. It focuses on learner factors, instructional design and teaching methodologies as foundational elements for course reviews. It forms a basis for establishing goals for measuring effectiveness, while introducing innovative teaching approaches to diverse learning. Comprehensive peer reviews, driven by standardized student ratings and self-evaluations guide a multifaceted process. The program has led to ongoing faculty development initiatives, including a newly instituted COPHS Certificate of Teaching for Health Professions Program.

**Developing an Objective Structured Clinical Exam (OSCE) to Supplement Performance-based Assessments.** Thomas Franko, Wilkes University, Adam C. Welch, Wilkes University, Daniel S. Longyhore, Wilkes University, Erica Hoot, Wilkes University. **Objective:** To describe the process of using OSCEs to supplement current performance-based assessments for the pre-advanced pharmacy practice experience (APPE) curriculum. **Methods:** The P3 Care Lab course coordinator led efforts to develop OSCEs at Wilkes University. A steering committee was formed and an expert was brought on campus to train Pharmacy Practice faculty and adjuncts in Summer 2014. In the Fall, the Curriculum Committee met with the course coordinator to review the pre-APPE needs as per ACPE Draft Standards 2016. The course coordinator created and mapped eight cases based on feedback. Cases were validated and scored by faculty during a two day retreat. Students in P3 Care Lab were oriented to the OSCE process in the Fall and Spring semesters. The OSCEs will be implemented as a course-level high-stakes assessment at the end of the Spring semester. In order to facilitate a remediation plan, students who do not pass will have their first APPE block rescheduled to focus on meeting the pre-APPE domain requirements. Full time faculty, adjuncts, and staff were solicited for involvement in the Spring OSCEs. **Results:** Results of the first cohort will be available by 2015 AACP Annual Meeting. After the Pharmacy Practice Department’s pilot of OSCEs, the School of Pharmacy is evaluating the process for developing course-level OSCEs at all professional didactic levels. **Implications:** The process, utilizing Standards 2016, helped fill assessment gaps in pre-APPE domains. This process may be useful for schools interested in supplementing performance-based assessments with OSCEs.

**Development and Implementation of a Co-curricular Professional Engagement Program for Pharmacy Students.** Maria M. Thurston, Mercer University; Annesha W. Lovett, Mercer University; Rebecca N. Burns, Mercer University; J. Grady Strom, Mercer University, James W. Bartling, Mercer University, Jordana Berry, Mercer University, Candace W. Barnett, Mercer University. **Background:** The ACPE Standards 2016 emphasize the importance of co-curricular experiences that “advance the development of professional attitudes and behaviors in all students” (Standard 14). Mercer University College of Pharmacy has embraced the challenge of promoting such experiences and has developed, implemented, and assessed an innovative co-curricular ‘Professional Engagement Program.” **Development/Innovation:** Beginning AY 2014-2015, a program to foster and promote professional attitudes and behaviors among first through fourth year students (n = 632) was implemented. This initiative was structured around pre-existing Professional Development Networks, small groups consisting of faculty, alumni, and students. Both student and faculty responsibilities were clearly defined and communicated in writing at inception to ensure achievement of program objectives. Student expectations consist of involvement in five key professional areas with various required and elective activities: development, seminars/events, involvement, community service, and leadership. In addition, students write a bimonthly reflection/projection, evaluated by their faculty advisor(s). Successful participation in the program is a yearly progression/graduation requirement. **Assessment/Impact:** Changes in student professionalism as a result of participation in this program are being assessed via completion of a pre- and post-questionnaire evaluating demographics and their level of professionalism. Mercer is committed to fostering personal and professional growth, with professionalism being one of our core values. Colleges and Schools of Pharmacy may adopt similar programs, in accordance with Standards 2016, to promote professional attitudes and behaviors within their students.
Development of a Multi-year Interprofessional Education Initiative in a Private University. Stacy Jaffe Gropack, Long Island University, Nathalia Berger, Long Island University, Harold L. Kirschenbaum, Long Island University, Anna Nogid, Long Island University. Objectives: 1. Develop a step-wise process for implementing IPE activities. 2. Educate faculty about IPE before conducting live events for students from 10 disciplines based on IPEC competencies. 3. Ensure IPE activities comply with accreditation standards for the college of pharmacy, school of health professions, and school of nursing. Method: A Task Force from the three colleges/schools created a mission statement and objectives, and then managed all activities. Faculty development programs were held in 2012 and 2013 to gain faculty buy-in and increase their knowledge about IPE in anticipation of student events. Large-scale student events (400 – 600 participants) were held beginning in April 2013 to highlight specific IPEC competencies. Events consist of a brief plenary followed by groups of 10-12 students with one faculty facilitator discussing a case, followed by large-group debriefing. In spring 2015, first professional year students representing each of the colleges/schools will be interviewing each other in a structured manner to learn about various professions. All planning was done by the Task Force without dedicated administrative support. An event check list was created and acts as a template moving forward. Results: Faculty assessment consists of program evaluations. Student assessment consists of pre- and post-program evaluations and, depending on the program, reflective essays. Results from faculty and student evaluations/assessments were overwhelmingly positive. Implications: A structured approach beginning with identification of a core group of individuals to manage activities can lead to well-attended faculty and student events across colleges/schools that meet program objectives and accreditation standards.

Development of a Professionalization Program in a Distance Education PharmD Curriculum. Mitchell Rodriguez, Lake Erie College of Osteopathic Medicine - Bradenton, McHardy Smith, Lake Erie College of Osteopathic Medicine, Katherine M. Tromp, Lake Erie College of Osteopathic Medicine, Sarah Treadway, Lake Erie College of Osteopathic Medicine - Bradenton, Hershey S. Bell, Lake Erie College of Osteopathic Medicine. Objective: Lake Erie College of Osteopathic Medicine (LECOM) offers three distinct PharmD pathways: four year traditional, three year accelerated, and distance education (DE). For students enrolled in live pathways, development of professional identity begins on campus through interactions with peers and faculty pharmacists during the first year of the curriculum. In the DE pathway, daily face-to-face interactions do not occur. As LECOM SOP is only the second program in the US to offer a DE pathway, Accreditation Council for Pharmaceutical Education (ACPE) expressed concerns regarding development of professional identity in DE students. A unique professionalization program within the first year of the curriculum for DE students was developed. Methods: The development of the professionalization program was based on literature and ideas from AACP (American Association of Colleges of Pharmacy) and ACCP (American College of Clinical Pharmacy). Additionally, initiatives within pharmacy, medical, and nursing curricula aimed at professionalization were examined. Results: Three pillars for development of professional identity were selected: responsibility, honesty and integrity. Required activities include establishing a local pharmacist mentors, participating in philanthropic endeavors, and completing drug information assignments. Additional professionalization activities held during a live summer session on campus include participation in a community health fair and white coat ceremony attendance. Implications: The professionalism program incorporated into the first year of the curriculum for students in the DE pathway aims to facilitate formation of professional identity. The activities included in the first year of the DE curriculum enable students to begin professional development, as mandated by ACPE standards.

Development of a Co-curricular e-portfolio to Promote Student Self-awareness, Professional Development and Encourage Leadership. Michael Gonyeau, Northeastern University, Margarita V. DiVall, Northeastern University, Jennifer L. Kirwin, Northeastern University, Debra A. Copeland, Northeastern University, Alexa A. Carlson, Northeastern University, Raymond Booth, Northeastern University. Background/Objectives: Our school has utilized a student portfolio for career planning and learning reflection. Student and faculty feedback and Standards 2016 prompted revisions with goals to 1) transition portfolio to e-platform; 2) further connect portfolio to programmatic/CAPE documentation of achievement with emphasis on self-awareness, professionalism, and leadership; and 3) capture interprofessional interactions/professionalization. Methods: Student and faculty feedback and Standards 2016 were utilized during revision. Student professional development committee was formed to oversee co-curricular professional requirements; develop/evaluate portfolio requirements/processes; provide faculty/student e-portfolio development; and ensure adequate opportunities for career development, leadership and research. The committee includes faculty and student representatives and administrators in charge of curriculum, assessment, academic affairs and experiential education. Results: The e-portfolio consists of 4 sections: Career development utilizing APhA pathways; CAPE outcomes achievement; Personalized Education plans/Differentiated Learning; and Professionalism. Student self-reflection is accomplished utilizing reflection-on-action model. The e-portfolio supports learning assessment formatively and summatively through programmatic outcome documentation/ reflection, and by student documentation/sharing of experiences, achievements and reflections with peers, faculty and employers, incorporating feedback into the learning process. The resultant portfolio guides students through goal setting and reflection with the aim to develop self-awareness. Students periodically reaffirm core tenets of professionalism and are required to attend professional development activities. Periodic reflections on leadership development guide students and encourage professional organization involvement as well as leadership in the workplace. Implications: Our redesigned e-portfolio is a co-curricular requirement that will allow better integration of classroom and practice environments to enhance students’ experiences through reflective practice and professionalization.

Development of a Proactive, Comprehensive Approach to Support Student Academic Success. Seth P. Brownlee, Northeast Ohio Medical University, Gina Ralston, Northeast Ohio Medical University, Amanda Yocum, Northeast Ohio Medical University. Northeast Ohio Medical University (NEOMED) has an innovative interprofessional curriculum that utilizes a shared resource model to support both pharmacy and medicine students. Guided by curricular assessment data and student feedback, the college of pharmacy faculty and university staff have devised a wide-ranging structure tailored to support pharmacy students’ personal and academic development throughout the program, including pre-matriculation. Prior to P1 year, admitted students are engaged in an online pre-matriculation program focused on practicing new learning skills with science content in preparation for early coursework. In addition, students complete a learning skills inventory to identify opportunities for personal improvement. Students continue to proactively develop their learning strategies in the curriculum with Professional Foundations, a transitional course focusing on personal, academic, and professional development. Co-curricular programming
Western University of Health Sciences
M. Hess,
Health Sciences
University of New England
University of New England College of Pharmacy.

Diamonds in the Rough: Co-curricular Opportunities at the new generation of learners.

has also been developed to prepare students for the P2 year and APPE rotations. Throughout the curriculum, the Office of Academic Support proactively monitors student progression. Services and intervention include exam analysis, personalized study planning, tutoring and supplemental instruction. A unique aspect of supplemental instruction is the intentional integration of learning skills development with content review. These programs are formally evaluated by utilization numbers, student satisfaction, and impact on student performance. Future initiatives target earlier identification of at-risk students, including the development of a learning analytics prediction model for student performance and the implementation of the ExamSoft® online testing and reporting program.

Development, Implementation, and Analysis of Games as Active and Self-Directed Learning. Bradley T. Andresen, Western University of Health Sciences, Eunice P. Chung, Western University of Health Sciences, Patrick Chan, Western University of Health Sciences, Karl M. Hess, Western University of Health Sciences, Cynthia Jackevicius, Western University of Health Sciences, Maria Lambros, Western University of Health Sciences, Michael Arevalo, Western University of Health Sciences, Jeff Macalino, Western University of Health Sciences, Janice Hoffman, Western University of Health Sciences. Gami- fication is a process of designing activities that are fun and engaging, but have an identified educational objective; thus, representing a method to address ACPE Standard 10.12: Teaching and Learning Methods. The Western University of Health Sciences College of Pharmacy has instituted a variety of games over the past three years. Recently, in conjunction with the IT department, we have moved to online games to help students master knowledge and skills. These games include individual trivia, team trivia, “carnival” matching games, and flash cards. The individual trivia and carnival games were developed to help students recall the top 200 drugs, antiarrhythmic, and medical terminology. These games were designed to stimulate self-directed, out of class, learning prior to an assessment. Team-based trivia, on the other hand, was designed for in-class use and retention of course material. Other games used in our curriculum include: PK Mathele, to incentivise mastery of pharmacokinetic calculations; PowerPoint-based Jeopardy, to enhance retention of course material; crossword puzzles to reinforce materials; and an Herbal Scavenger Hunt, to increase herbal medication identification. The majority of students expressed an appreciation of the games as a technique for learning and studying. Furthermore, limited analysis indicates games increased student performance on assessments. Conclusion Implementation of games into the curriculum was a conscious effort to engage students and promote active learning. Using games to reinforce the mastery of the knowledge in a fun and exciting way is well received by students and aligns with the learning style of the new generation of learners.

Driving Curricular Improvements with Milestone Examinations. Marcy Herrick, Appalachian College of Pharmacy, Ann C. Hylton, Appalachian College of Pharmacy, Michael P. Justice, Appalachian College of Pharmacy, Charles R. Breese, Appalachian College of Pharmacy, Donna M. Adkins, Appalachian College of Pharmacy, Craig R. Mullins, Appalachian College of Pharmacy, Ghaus Khan, Appalachian College of Pharmacy. Objectives: To identify areas for curricular improvement by assessing student achievement of expected learning outcomes and competencies using annual Milestone Examinations. Methods: Students in a 3-year Pharm.D. program were tested at the end of each professional year with a comprehensive Milestone Examination. The exam was designed to evaluate knowledge retention and clinical competencies using a combination of multiple choice (MCQ), Structured Patient Assessments (SPA), and Objective Structured Clinical Examination (OSCE) questions. Testing categories included laboratory compounding and calculations, patient counseling, physician interaction, and a therapeutic case. Students and faculty were surveyed on their satisfaction with the examination. Results: Results for MCQ, SPA, and OSCE components were combined for analysis to develop individualized remediation plans to address student deficiencies in educational outcomes and competencies. Student and faculty feedback were used to improve the examination each year. Although initially designed to be a tool for assessing student competencies, evaluation of the results from Milestone Examination(s) have highlighted areas for curricular improvements. Specifically, these results have led to a number of curricular changes, including incorporation of graded comprehensive cases and OSCE skills days into existing therapeutics courses, an increased emphasis on the use of patient simulation in didactic courses, and inclusion of multiple short answer questions on formal assessments. Additionally, health professional interaction and patient counseling were incorporated into the communications course. Implications: In addition to assessing whether students are meeting expected learning outcomes and competencies, results from Milestone Examinations are used to identify specific areas for curricular improvements to foster student success.

E-Portfolios framed by Continuing Professional Development Models to Assess CAPE Competencies and Roles. Katrina H. Mintz, Samford University, Michael G. Kendrach, Samford University, Jennifer W. Beall, Samford University, Peter J. Hughes, Samford
Engaging PharmD Students through a Concentration in Pharmacy Research Program. Stacy D. Brown, East Tennessee State University, Nicholas E. Hagemeier, East Tennessee State University, David L. Hurley, East Tennessee State University, Ralph A. Lugo, East Tennessee State University, David S. Roane, East Tennessee State University, Larry D. Calhoun, East Tennessee State University. The startup of the Bill Gatton College of Pharmacy has allowed the introduction of novel means of engaging students in a variety of programs. The Concentration in Pharmacy Research (CPRx) is designed to give students focused experience in conducting research in Pharmaceutical Sciences and Pharmacy Practice. Initiated by faculty desire to engage PharmD students productively in the lab to augment our degree program, the CPRx arose because of student desire for recognition of their research efforts. The CPRx was formalized by developing a proposal that contained input from students, faculty and staff, passed through both departments and then the Faculty Council. Successful fulfillment of the CPRx requires students to complete a total of 12 credits in designated research elective courses, offered in both departments. A capstone APPE is also required where each student drafts a publication of his or her work and submits the paper for publication. The demand for research elective participation has been large. Currently, a total of 61 2nd and 3rd year PharmD students are enrolled in research courses. Of these, 15 are formally enrolled in the CPRx. To date, 73 abstracts and presentations and 25 peer-reviewed papers have been authored by Gatton students. The overall success of this program shows the powerful enthusiasm that arises from faculty and student engagement in active and productive research. The CPRx provides a unique means for Gatton students, especially those seeking residencies, to individualize their PharmD degree and enable greater success and diversity of career choices.

Enhancing Student Learning, Success, Leadership and Assessment through Innovations. Eric G. Boyce, University of the Pacific, Jenana H. Maker, University of the Pacific, Veronica T. Bandy, University of the Pacific, Allen Shek, University of the Pacific, Nancy L. DeGuire, University of the Pacific, Linda V. Panoisky, University of the Pacific. In order to meet ACPE Standards 2016 in a large Doctor of Pharmacy program, the faculty at the University of the Pacific have implemented a number of innovative methods to enhance student learning and assessment in on-campus and experiential courses; interprofessional education using distance learning; student success through the development of a student success center, elective courses, and enhancements in tutoring, advising and early warning; and leadership through co-curricular and curricular components. Intensive learning strategies in on-campus courses have included the use of a flipped classroom, team-based learning, instant student response system, and case-based learning in small groups. Simulated interprofessional education activities utilizes distance education technology to connect students across two campuses. An integrated system for experiential education includes the use of a centralized IPPE region and decentralized APPE regions managed mostly by full-time faculty. A comprehensive learning assessment program consisting of three skills and three knowledge assessments has been integrated into select required courses across the didactic curriculum and provides individual feedback to students, opportunities for remediation, and feedback to faculty on the curriculum. Student assessment continues during APPEs through capstone courses. Furthermore, student success is being addressed through the development of the Office of Academic Success, elective courses, and enhancements in the tutoring, faculty advising, and early warning programs. Student leadership and professional development are promoted using...
a highly complex array of student-led organizations to achieve outcomes in service learning IPPEs targeting health care outreach.

**Examination of a Novel Tool for Student Self-Assessment of Programmatic Expected Outcomes.** Janet H. Cooley, The University of Arizona, Chase Wilson, The University of Arizona. **Objectives:** It is challenging for Colleges of Pharmacy to determine if curricula facilitate students' fulfillment of expected outcomes. In response, an online student self-assessment tool was created to measure expected outcomes and track student reported experiences through the program. **Methods:** Students self-report their fulfillment of each expected outcome (based on CAPE 2007) using a 54-item online survey. A 4-point scale (1 = not exposed, 2 = novice, 3 = intermediate, 4 = proficient) is used to report on each outcome, and qualitative evidence provided in the students' hard-copy portfolios. The survey results are used to report item aggregate scores to mentors for discussion in individual meetings. Additionally, the college assessment committee is able to use these reports to identify gaps within the curriculum, extra-curricular and co-curricular activities. **Results:** 96.2% of 401 students responded in 2015, allowing class-by-class analysis for each of the expected outcomes, as well as longitudinal tracking over time for the class of 2015’s second, third and fourth years. As expected, as students progress through the curriculum, they report higher levels of self-assessed proficiency to the expected outcomes items. The midpoint of 4th year, with all items approach “proficient,” with averages increasing and standard deviations decreasing with every additional year of training. **Implications:** This tool provides administrators, mentors, and students with some insight into student progress in expected outcomes through the curriculum, individually and as a cohort. The tool will evolve with the implementation of new expected outcomes to meet the ACPE Standards 2016 and CAPE 2013.

**Facilitating Personal Development in PharmD Students.** Aaron J. Lengel, The University of Toledo, Laurie S. Mauro, The University of Toledo, Michelle N. Schroeder, The University of Toledo, Gayle L. Kamm, The University of Toledo, Michael J. Peeters, The University of Toledo. **Background:** In order for students to better appreciate the implications of professional tenets and their role as pharmacy professionals, they must first understand the personal factors that impact their relationships with those around them. The college has begun facilitating experiences centered on the creation of personal mission statements, goal setting, and conflict understanding. To facilitate the personal tools necessary to one day embody the tenets of the profession. **Methods:** Students are assigned a summer reading prior to entry into the PharmD program. Before the first week of classes, large and small group reflective discussions are facilitated during a 3-day orientation program that expands on different personal development themes modeled after concepts created by the Arbinger Institute. During the first 2 weeks of fall semester within the professional practice development course, initial discussions are expanded upon with exercises that facilitate the development of a personal mission statement and the creation of semester goals. The students reevaluate the statement and goals later in the semester as a reflective activity. Additionally, group activities during lectures and laboratory sessions facilitate student reflection of personal and professional growth, interpersonal relationships, student conflicts, and motivational interviewing. **Assessment:** After the first semester of implementing these new exercises, students were given a reflection and survey to assess whether or not they revisited their mission statement or goals the following semester. In the future, students will be prompted to reflect on their personal mission statement and goals at the beginning and end of each semester.
Indicator, Leadership Frames, and demographics questionnaires. Logistic regression models were used to examine the relationship between student KTS preferences (SJ, SP, NF, or NT) and the human resource (HR) leadership framework while controlling for differences in student age, gender, class, and leadership experience. Results: A total of 198 students participated in this study; 71 (36%) exhibited a HR leadership framework. The odds of having a HR framework were 78% and 68% lower among students who were SJ than those who were SP (adjusted odds ratio (AOR): 0.22; 95% CI: 0.07-0.64) and NF (AOR: 0.32; 95% CI: 0.14-0.78) but not statistically different from those who were NT (AOR: 1.01; 95% CI: 0.27-4.42). In other words, students who were SP or NF were more likely to exhibit a HR leadership framework than those who were SJ (or NT). Student age, gender, class and previous experience did not influence (modify or confound) the relationship between personality preference and leadership style. Implications: Assessing students’ personality preferences and leadership framework can be used to increase self-awareness and facilitate more intentional leadership training.

Impact of a New School of Pharmacy on Clinical Pharmacy Services in a Rural Community. Evan Williams, Husson University, Alla Y. Fabrikant, Husson University. Objective: To assess the impact of clinical pharmacy services provided by pharmacy school faculty in a rural community, describe the services offered, and relate how these services address Standard 13 of ACPE Standards 2016. Methods: Pharmacy practice faculty at Husson University who practice in the greater Bangor area were asked to describe the types of clinical services they offer at their practice site. Responses were used to illustrate the impact clinical faculty had on expanding existing clinical services, the establishment of new pharmacy services, and provide descriptions of the services provided in new settings within the rural community. Results: Establishing a pharmacy school resulted in pharmacy practice faculty developing clinical services in varied settings and specialty areas. Three faculty members have developed ambulatory care services in multiple area clinics, and two others have established or expanded inpatient internal medicine clinical pharmacy services. Other faculty members have established novel specialty services in cardiology, emergency medicine, infectious disease, pediatrics, psychiatry, and geriatric medicine. In addition, a new drug information center has been created as a resource for healthcare practices in the community. Further data regarding practice specific services will be provided as it relates to Standard 13. Implications: The expansion of new pharmacy schools has been met with some negative impressions, however this data highlights the positive impact on clinical practice that new schools can have within a community when established in an area of need, and relates these services to improvement of Standard 13 of the new ACPE Standards.

Implementation of an e-Portfolio of Activities to Expand Development of Student Professionalism. Carrie L. Griffiths, Wingate University, Megan L. Duckett, Wingate University, Janine S. Douglas, Wingate University, Michael L. Manolakis, Wingate University, Michael W. Neville, Wingate University, Tanya R. Riley, Wingate University, Nick Wright, Wingate University, Samantha Faw, Wingate University, Laura Bowers, Wingate University. The Shenandoah University School of Pharmacy’s Professionalization Committee (WUSOP PC) is incorporating a formal professional development component to the curriculum. This component will encompass co-curricular, curricular, and extracurricular activities throughout the student’s entire pharmacy school experience. Since its inception, the school has strongly encouraged professional development within its student pharmacists through a variety of means. However, WUSOP PC expanded its student development efforts in 2010 to include recommendations from CAPE. Domain 4 of the 2013 CAPE Educational Outcomes highlights the importance of Personal and Professional Development. Objective 4.4 (Professionalism) was used by Committee members as a framework to create a menu of activities and assignments that students will complete to satisfy these enhanced professionalism requirements. This initiative is consistent with Standard 4 of the ACPE Standards 2016, which requires pharmacy programs to instill behaviors and values into graduates that foster professionalism. Members agreed that this electronic portfolio should include activities for P1 - P4 students with some activities being more difficult (e.g. attending a national meeting) and some much easier (e.g. attending a professional presentation at the school) to satisfy requirements. Student items, including a CV, reflective essays, etc., will be maintained in an electronic dossier. Faculty anticipate that these new requirements will bolster the development of a professional mindset in students and support faculty mentors who can address professionalism topics during mentor-mentee discussions. The Committee continues to develop specific recommendations to implement these new requirements and plans to share them with all faculty members for review prior to implementation.

Incorporating a Required Longitudinal Professional Development Course Series into the Doctor of Pharmacy Program. Beth E. Welch, Western New England University, Joshua J. Spooner, Western New England University, Kim D. Tanzer, Western New England University. Objectives: To foster the personal and professional attributes of learners to both meet CAPE 2013 Educational Outcomes and align with the College’s vision for the qualities possessed by graduating learners. Methods: A required zero credit course series was developed and implemented for all professional years. Within the course series, learners establish annual and four year goals, attend presentations, participate in roundtable discussions, complete reflective writing assignments, document service and professional meeting attendance, and maintain electronic portfolios. Themed years (PY1: introduction to the profession; PY2: teamwork and interprofessional care; PY3: cultural competency and career preparation) allow for incremental skill building. Assignments are reviewed by academic faculty advisers and the supervising Assistant/Associate Dean; progress is evaluated each semester (fall: formative; spring: summative). The course is graded pass/fail; penalties for missed or late assignments mimic progressive Board of Pharmacy sanctions, up to (and including) course failure. Results: The course series has been well received by learners, though the importance of the course series is not apparent to many until the later years of their education. Course failure rates are low (0%-3% learners/class), due in part to early intervention and remediation opportunities following poor performance. Implications: This course series addresses ACPE 2016 accreditation Standard 4 (Personal and Professional Development), with specific fulfillment of key elements 4.1 (self-awareness), 4.3 (innovation and entrepreneurship), and 4.4 (professionalism).

Innovations in Curricular Experiences and Assessment to Address AACP 2016 Standards. Marcia L. Brackbill, Shenandoah University, Mark S. Johnson, Shenandoah University. The Shenandoah University BJD School of Pharmacy (SOP) highlights three projects that are currently in practice or actively being developed to address AACP 2016 Standards. First, a progressive Capstone Assessment (CA) is being developed with the goal of evaluating whether the SOP student learning outcomes are being met and to assess students for APPE readiness. At the end of each didactic year, students will take a multi-part assessment consisting of a Top 200 drug exam, an OSCE, and the
PCOA. Each year, the CA becomes more “progressive” in nature including a wider range of knowledge and achievement of outcomes demonstrating APPE readiness. Second, student pharmacists are required to complete a three-course Patient Assessment series that allows students to apply concepts learned in therapeutics courses through team-based learning activities and simulated patient encounters. Additionally, students are taught how to provide care within the framework of the Pharmacists’ Patient Care Process. Lastly, innovative APPE experiences are being developed in multiple sites. P4 students will be providing comprehensive medication management (CMM) to post-discharge high-risk patients within a Medicare Shared Savings ACO with the goal to prevent readmission, increase accurate medication lists, and encourage patient adherence and a positive outcome with their medication regimen. In addition to CMM for high-risk patients recently discharged, they will also assist with high-utilizing patients to the health care system. These are individuals that have high medication-related costs, high use of urgent or emergency care, and at high risk for medication-related problems.

Innovative Curricular Approaches to Standards 2016. Stanley S. Weber, University of Washington, Michaelene Kedzierski, University of Washington, Rachel A. Allen, University of Washington, Thomas Hazlet, University of Washington, Jennifer Danielson, University of Washington. The University of Washington School of Pharmacy has several required activities in our curriculum designed to develop abilities identified in ACPE Standards 3 and 4. We highlight a few: Mock Interviews (PY1): Students participate in realistic mock job interviews conducted with HR teams from an area chain pharmacy building professionalism, communication, and self-awareness abilities. Therapeutic Frame (PY2): Students are introduced to a “Therapeutic Frame” where they analyze attitudes about drug use disorders and users, and develop a personal therapeutic frame regarding how these attitudes affect care for all patients. This experience builds self-awareness, advocacy, communication, and professionalism abilities. Fix the Law Project (PY2): With a goal of practicing a process to change regulations affecting practice, student groups identify problem laws, evaluate alternatives, and suggest changes to regulators. This experience builds problem solving, collaboration, communication, leadership, innovation, advocacy, and professionalism abilities. Leadership Challenge & Collaborative Drug Therapy Agreement (CDTA) Project (PY2): Following community IPPE, groups identify new pharmacy services, perform needs assessments, create visions, brainstorm challenges to implementation, write CDTAs, suggest processes for implementation and evaluation and “pitch” the proposal to pharmacists. This experience to strengthens student’s problem solving, collaboration, communication, leadership, innovation, and professionalism abilities. IPE Mentor Project (PY3): Monthly interprofessional mentor meetings with small groups of students, faculty members, and preceptors are designed to facilitate reflection on IPE activities completed, anticipate the activities planned, and provide advice about navigating school and career development and placement. This builds IPE collaboration, advocacy, communication, self-awareness, and professionalism abilities.

Innovative Problem Based Learning with a State School of Medicine. Sommer D. Zarbock, Keck Graduate Institute, Jonathan W. Horstmann, University of California Riverside School of Medicine, Christopher C. Miller, University of California Riverside School of Medicine, Heidi S. Millard, University of California Riverside School of Medicine, Maegen V. Dupper, University of California Riverside School of Medicine, Kendrick A. Davis, University of California Riverside School of Medicine. One of the missions of the Keck Graduate Institute (KGI) School of Pharmacy is to emphasize interprofessional collaboration. The Accreditation Council for Pharmacy Education recently released new 2016 Standards, in which schools of pharmacy will be required to provide interprofessional opportunities (Standard 11). Recognizing the need for pharmacy graduates to practice in interprofessional collaborative care, the Director of Interprofessional Education (IPE) developed innovative Problem Based Learning (PBL) cases with the University of California Riverside School of Medicine (UCR SoM) faculty. This is a truly unique partnership in that KGI is a private school, while UCR is a state school; however, both are new professional schools with a passion for IPE. The aim of the joint PBL program is to foster communications skills amongst the different professions, and provide students the ability to enhance their patient skills in a team approach. The PBL cases are written to encompass both a diagnostic and a medication aspect. Teams work together through a progressive case for 3 hours and each team is facilitated by a pharmacist or physician whom grades the students using an interprofessional oriented rubric. To advance upon the learning, future cases will incorporate mannequins at the UCR SoM Simulation Center, this will allow students more of a hands-on approach to care and emphasis upon improving quality of care across the continuum. Students from both institutions will be asked to complete a survey regarding their experiences with this collaborative, interprofessional relationship. Survey results will be collected, analyzed, and presented.

Innovative Teaching Strategies to Enhance Cultural Sensitivity in Pharmacy Students. Lakesha M. Butler, Southern Illinois University Edwardsville. To address the 2016 CAPE outcome 3.5, Cultural sensitivity, innovative teaching strategies to enhance cultural sensitivity in pharmacy students are provided to all 1st and 2nd year pharmacy students through required activity and course. All 1st year pharmacy students participate in a Global Bead activity during New Student Orientation. The Global Bead activity visually shows students the diversity of people they may have been exposed to in the past, and to encourage them to explore relationships with students of varying ethnic backgrounds in the future. Future plans for assessment of this activity include a comparison of global bead diversity in the 1st year and 3rd year prior to APPE rotations. All 2nd year pharmacy students enroll in a required pharmacy course, Health Promotion and Literacy, which addresses cultural competency, cross-cultural communication, biases and stereotypes, health beliefs and health literacy. During the first week in this course, students are exposed to different cultures through food during the “Taste of Cultures” activity and complete a pre- and post-cultural knowledge quiz. Students also view clips of the movie “Crash” depicting common stereotypes and participate in reflective portfolio writing and class discussion about stereotypes and biases. Additionally in the course, pharmacy students participate with sophomore nursing students in interprofessional cross-cultural communication seminars assessed using the RIPLS, cultural competency knowledge quiz, the Clinical Cultural Competency questionnaire and a student perception survey. Overall impact of the course is assessed through student evaluations and peer observations of teaching, student reflective writing and group instructional feedback technique.

Integration of Co-curricular Activities into Introductory Pharmacy Practice Experience (IPPE) Requirements. Eric H. Gilliam, University of Colorado, Kari L. Franson, University of Colorado, Megan E. Thompson, The University of New Mexico, Wesley A. Nuffer, University of Colorado. Background: Prior to the fall 2014 semester, the University of Colorado Skaggs School of Pharmacy and Pharmaceutical Sciences (SSPPS) experiential program provided experiential course credit on an ad hoc basis for students volunteering at public outreach events. With an increased emphasis on co-curricular
Interprofessional Education Initiatives Incorporated into Doctor of Pharmacy and Physician Assistant Programs. William M. Maidhof, St. John’s University, Olga Hilas, St. John’s University, Candace J. Smith, St. John’s University, Danielle C. Ezzo, St. John’s University, Carmela Avena-Woods, St. John’s University, John M. Conry, St. John’s University, Maria M. Mantione, St. John’s University, Emily M. Ambizas, St. John’s University, Joseph V. Etzel, St. John’s University, Pamela J. Gregory-Fernandez, St. John’s University, Danielle M. Kruger, St. John’s University, Sandra Beysolow, St. John’s University, Irene R. Eng, St. John’s University, Tina J. Kannaz, St. John’s University, Kathleen Murphy, St. John’s University, Jagannath Muzundar, St. John’s University, Daniel T. Podd, St. John’s University, Anthony Marziali, St. John’s University, Russell J. DiGate, St. John’s University.

Objective: To develop, incorporate and assess interprofessional education activities within Doctor of Pharmacy and Physician Assistant curricula. Methods: Interprofessional activities were developed and incorporated into required coursework for all first and second professional year student pharmacists (n = 527), as well as all third professional year student physician assistants (n = 85). The first activity focused on roles and responsibilities of healthcare professionals, empathy, patient adherence and communication. The second involved patient case evaluations, prescription writing and subsequent assessment of appropriateness. Questionnaires and class discussions were used to assess experiences. Results: Utilizing Role Perception Questionnaires, student pharmacists and physician assistants indicated greater perceived value for one another’s profession at activity completion. The majority of student pharmacists (>60%) and physician assistants (>50%) also agreed or strongly agreed they better understood the prescription process, legal and therapeutic issues associated with prescriptions, appropriate selection of and justification for treatment and the importance of respectful and assertive communication after the interactive exercise. Implications: Based on student and faculty feedback, these interprofessional activities proved to be valuable additions to the current pharmacy and physician assistant...
Leadership and Team Development through Didactic and Interprofessional Experiences. Lauren S. Schlesselman, University of Connecticut, Devra Khanh Dang, University of Connecticut. The CAPE 2013 Outcomes and the ACPE Standards 2016 address the need for pharmacists to serve as leaders and team members in the evolving healthcare environment. Although our curriculum had previously not addressed leadership development in an intentional format and had addressed interprofessional teamwork primarily through IPPEs and APPEs, the University of Connecticut School of Pharmacy and other healthcare disciplines recognized the importance of expanding leadership and team development longitudinally. To accomplish this, a pedagogical change was critical, along with the actual development of didactic and interprofessional experiences. The first priority was establishing a cultural and pedagogical change which recognized the importance of developing these skills through longitudinal interprofessional activities. At the university-level, the Committee of Interprofessional Excellence in Healthcare (CIPEh) was formed, while at the school-level the Interprofessional Education Committee was developed. The next priority was initiating didactic experiences within the school or across disciplines to address these skills, including individual courses and tracks. Finally co-curricular offerings were instituted, including leadership retreats, Dean’s afternoon, farmer’s markets, and home care visits. The health disciplines within the University of Connecticut continue to identify opportunities for further leadership and interprofessional team development through the involvement of the university’s Office of Leadership Programs and as outlined in the CIPEh strategic plan and proposed pilot projects documents.

Leveraging Student Organizations in Leadership Development and Growth. Kishor M. Wasan, University of Saskatchewan, Yvonne Shevchuk, University of Saskatchewan, Stephanie M. Mulhall, University of Saskatchewan. Co-curricular activities are used in pharmacy education to develop professional and personal attributes critical for student success. Colleges and schools of pharmacy invest considerable resources in planning and facilitation of activities, programs and experiences, with the aim of promoting student learning and leadership. The utilization of student organizations in providing such experiences can result in greater engagement with the co-curricular content and attainment of a more meaningful and transformative experience. At our University, the Pharmacy and Nutrition Students’ Society and the Canadian Association of Pharmacy Students and Interns SK Branch organize an extensive array of academic experiences, which significantly enhance professional development and leadership skills. They work closely with administration, and their peers in Nutrition, developing both discipline-specific and interprofessional events, ranging from a Health Sciences networking evening on Aboriginal History, Health and Cultural Safety to bringing medication safety programs to school children. While the College assists students in ensuring the relevance of experiences, planning and facilitation is led by students, allowing further opportunities for hands-on learning. This poster will explore the co-curricular experiences that are currently being facilitated by our student organizations, with emphasis on key and emerging issues being addressed by the student leaders. Implications This model allows us to enable students and be responsive to students’ needs. The challenge is in developing systematic approaches to record and monitor the continuing development of students and the impact on students and their professional growth.

Medicare Part D Outreach in Underserved Populations as a Co-Curricular Offering. Nathan A. Painter, University of California, San Diego, Kelly C. Lee, University of California, San Diego. Pharmacists are uniquely skilled to advocate for their patients in terms of prescription curricula. In alignment with the vision of interprofessional learning put forth by accrediting bodies of each discipline, improvements and expansion of interprofessional activities will continue to be made for future students.

Interprofessional Education in a Non-Health Science Center College of Pharmacy. Kristin Montarella, Southwestern Oklahoma State University. Introduction: Development of interprofessional education (IPE) activities is a central piece to ACPE Standards 2016. For Colleges of Pharmacy not affiliated with a health science center, identification of partnering programs and development of activities presents unique challenges. We have attempted to develop activities to work within this framework and address some of these challenges. Activity Design: The initial activity designed with the OSU College of Osteopathic Medicine incorporated second year pharmacy students with second year medical students. The overall program was designed as two initial independent student group discussions. A final faculty facilitated case discussion occurred at the end of the semester. During this session, groups discussed a variety of issues related to patient cases in regards to treatment, roles and responsibilities of various health care providers, and the importance of a team approach to facilitate patient care. Assessment Strategies: A variety of assessment approaches were utilized. These ranged from pre- and post-activity surveys, reflective journals, and more formal submission of patient care plans and written responses to questions posed to the groups. Conclusion: This initial activity laid the groundwork for the development of future interprofessional activities between the SWOSU College of Pharmacy and the OSU College of Osteopathic Medicine. This trial program was well received and is anticipated to lead to the development of future mutually beneficial activities for the students of both programs.

Leadership Development through Required Co-Curricular Experiences – The Students’ Perspective. Jane R. Mort, South Dakota State University, Joe D. Strain, South Dakota State University, Brad R. Laible, South Dakota State University, Dennis D. Hedge, South Dakota State University. Intent: A longitudinal leadership program containing co-curricular requirements was designed to foster leadership for all students. Process: In 2008, a longitudinal leadership curriculum was implemented that included self-assessment, lectures, leader interview, and two co-curricular requirements (pharmacy leadership service by end of P3 year; professional business meeting attendance in P4 year). Students completed reflections on the co-curricular portion and a P4 survey. Data was analyzed for 2013 graduates (n = 68). Outcomes: To satisfy the co-curricular requirement to serve as a pharmacy leader, 55.2% of students served in an organizational role and 23.9% organized an event. Leadership benefits noted in the reflections included increased confidence (22.4% of students), recognition of the importance of involving others (22.4%) and appreciation of leaders (13.4%). Survey results indicated 47.8% of students pursued the activity solely to satisfy the requirement. Participation in various student pharmacy organizations ranged from 8.7% to 88.4% of all students. To meet the co-curricular requirement for professional business meeting attendance, 73.5% of students attended a state pharmacist association meeting (annual or district) and 17.6% attended the ASHP Midyear Meeting. Students reported specific plans as practitioners to join a committee/run an office (25% of students) or carry out an event (19.1%). Students reported specific plans as practitioners to join a committee/run an office (25% of students) or carry out an event (19.1%). Students indicated the most appealing aspect of organizational involvement was meeting attendance, networking, and “keeping up.” Survey results showed only 53.6% of students attended a state or national meeting prior to the P4 year. Implications: Co-curricular leadership requirements assured involvement by all students, and reflections demonstrated leadership development and future desired participation.
Meeting Faculty Development Needs via Inclusive Processes in a Newly Established College of Pharmacy. Keith T. Veltri, Touro College of Pharmacy-New York, Suzannah Callaghan, Touro College of Pharmacy-New York, John Fisher, Touro College of Pharmacy-New York, Martha M. Rumore, Touro College of Pharmacy-New York, Rebecca Salbu, Touro College of Pharmacy-New York, Shelly Warwick, Touro College of Pharmacy-New York, Deborah Wittman, Touro College of Pharmacy-New York, Suzanne Soliman, Touro College of Pharmacy-New York. Objectives: Professional faculty development is essential in establishing the skills necessary to become both leaders in education and research. Changes were necessary for our College in this area. This study describes the development of a comprehensive faculty development program that is in compliance with the new ACPE Standards 2016. Methods: In fall 2013, the College reappointed a new chair of the faculty development committee (FDC). A needs assessment survey was created and circulated amongst the faculty members requesting prioritization of several key focus areas and measurable ACPE standard outcomes that were lacking and required immediate attention. Results: The FDC has updated and solidified many fundamental College policies and procedures surrounding the academic plan, performance appraisals and contract renewal processes. A peer evaluation procedure and tool were created to provide non-punitive feedback to faculty in an attempt to identify strengths and weaknesses. For new hires, a faculty orientation program was created for chairs and a mentoring plan was developed to identify and address obstacles in challenges early in their role. Over fifteen workshops were also offered to assist in personal and professional development throughout the last 18 months. Administration is currently devising a plan to alleviate teaching loads to allow faculty additional time to pursue scholarship. Faculty perception of the FDC effectiveness improved from 37.7% to 97% based on AACP/ACPE survey results. Implications: It is essential to the growth of any institution to make a concerted effort to incorporate inclusive processes amongst faculty for successful decision making strategies.

Meeting the Challenges of Building Skills and Community in a Rural College of Pharmacy. Elizabeth Ackerman, University of Hawaii at Hilo, Patricia Jusczak, University of Hawaii at Hilo, Paula Zeszotarski, University of Hawaii at Hilo, Jarred Prudencio, University of Hawaii at Hilo. To comply with the new ACPE Standards 2016, three initiatives help student pharmacists enhance their skills and strengthen their community despite the geographic challenges faced by the only College of Pharmacy in the Pacific. First, interprofessional education activities, designed in collaboration with other health care schools, aim to develop students who are “practice-ready and team-ready”. The use of video conferencing technology enabled students of medicine, nursing, pharmacy, and social work to collaborate despite being located on different islands. Performance based activities, including simulation cases, incorporated core competencies needed to function as members of an interprofessional healthcare team. Next, a capstone course in the 3rd year of the PharmD curriculum is designed to increase APPE readiness for students immediately prior to starting 4th year clinical rotations. This year, selected CAPE 2013 outcomes have been mapped to specific items on performance-based examination rubrics. This mapping will allow for the assessment of how well DKICP students are achieving these outcomes as well as provide information on APPE readiness to major stakeholders. Finally, College-sponsored student organizations and community activities provide important professional development opportunities, especially in a small rural community. An online pilot survey of third year students showed the majority of students participated in the co-curriculum and also measured the amount of time, the degree of involvement, and the impact on CAPE 2013 professional development outcomes. Although training student pharmacists in an island state is completely unique to Hawaii, we believe these approaches are generally applicable for institutions based in rural settings.

OneStepHire! A “Smarter” Smartphone Application for Finding the Perfect Career. Brooke Linn, Purdue University, Brian M. Shepler, Purdue University. Objective: It is more difficult for pharmacy students to secure internships, residencies, fellowships, and full-time positions than it was 10 years ago. Many students are unaware of where to begin the career search. Outside of the companies that attend the annual college career fair, students have little knowledge about what opportunities are available in pharmaceutical companies, health systems, and pharmacies. The current job search engines can be cumbersome and not specific to pharmacy positions nor to the specific companies/health systems that may have strong relationships with the college. Having a specialized Smartphone application populated with companies that have an existing relationship with the college may help direct students toward opportunities and employers that are familiar with the caliber of students applying for the positions, thereby increasing students’ likelihood of securing positions. Methods: The OneStepHire! Smartphone app allows students to connect directly to employers’ webpages through a central hub to assist in the search and application process. Students were given a demonstration of the application and asked to download the webpage to their mobile devices. Results: Approximately 2,700 pages were accessed during the first semester. Statistical analysis of student placement in internships, fellowships, and full-time positions as a direct result of app usage will be measured. The college’s Career Development Committee will also explore additional resources to add to the app to enhance the student experience. Implications: This career specific, customizable system is designed to assist students in searching for opportunities within organizations to which the college is already connected.

Peer Mentorship Reduces Stress for First Year Pharmacy Students. Rochelle Nappi, Nova Southeastern University; Robert McGory, Nova Southeastern University; Tony Perez, Nova Southeastern University; Ada Jalice, Nova Southeastern University. Starting a professional degree program can be a stressful time for a student. First year students are concerned with managing a heavy course load, meeting new people, and the overall experience of adjusting to a new environment. In an effort to assist 157 first year pharmacy students with this transitional period, a Peer Mentor Program was developed. This program matched a small group (4-5) of first year students with a second year Peer Mentor. Thirty seven 2nd year students applied to the program. The application process was voluntary and interested students submitted an online application. Applications were reviewed by two students previously designated as Peer Mentor Program Leaders and a college
Readiness and Interprofessional Readiness. Heidi Eukel, Performance-Based Assessments: Simulations to Assess APPE Readiness and Interprofessional Readiness. North Dakota State University, Wendy I. Brown, North Dakota State University, Alicia Fitz, North Dakota State University, Jeanne E. Frenzel, North Dakota State University, Cynthia A. Naughton, North Dakota State University, Elizabeth T. Skoy, North Dakota State University.

Standard 25 of the ACPE Standards 2016 includes specific key elements addressing interprofessional preparedness (25.6) and APPE preparedness (25.8). North Dakota State University (NDSU) has employed simulations within the didactic curriculum to assess these elements. Clinical simulations were designed within pre-existing courses to assess various aspects of student preparedness including: patient assessment, verbal communication, clinical evaluation, and teamwork. Formative and/or summative assessments were created for each. Focused History and Physical Examination (PE): First year professional pharmacy students receive blended learning, formative feedback during group activities, and a summative OSCE assessing interview skills and physical exam technique. Interprofessional Readiness: Second year professional pharmacy, nursing, nutrition, respiratory therapy, and social work students participate in one of nine standardized team simulations once at the beginning of the semester (formative assessment) and once at the end of the semester (summative assessment). The team’s ability to collaborate is evaluated by faculty facilitators using a modified version of the Jefferson Interprofessional Observation Guide. Medication Therapy Management (MTM): Third year professional pharmacy students (P3) participate in a simulated MTM comprehensive medication review in which they conduct a comprehensive patient interview and identify potential and actual drug therapy problems. Formative and summative feedback is provided using a faculty-developed rubric. Dispensing/Consultation and Compounding Readiness: P3 students complete comprehensive simulated assessments in dispensing and consultation, nonsterile compounding, and sterile compounding immediately prior to starting their APPEs. Direct observation is used to provide summative feedback. SUMMARY NDSU has successfully employed simulations within the didactic curriculum which assess interprofessional and APPE preparedness.

Performance-based assessment using Objective Structure Clinical Exams (OSCEs) at the University of Waterloo School of Pharmacy. Eric F. Schneider, University of Waterloo, Elaine Lillie, University of Waterloo, Cynthia Richard, University of Waterloo. Objective Structured Clinical Exams (OSCEs) are standardized performance-based assessments used to evaluate the critical thinking, clinical skills, and communication abilities of students. Students at the University of Waterloo School of Pharmacy complete a minimum of four OSCEs throughout the four-year PharmD program. These exams serve a variety of purposes. For example, the first-, second-, and third-year OSCEs are used as course components in Professional Practice courses, the second-year OSCE forms part of a midpoint assessment, the fourth-year OSCE is used as a high-stakes summative assessment that students must complete as a milestone for graduation. The school’s OSCE team has developed a blueprint to guide station number and type for each OSCE, as well as skills that are emphasized. Cases are typically developed by faculty and reviewed by a panel of faculty and practicing pharmacists. Exam training for standardized patients and assessors emphasizes consistency in station portrayal and assessment. Exam scores for OSCEs used as course components are determined by item weighting based on necessity/importance, and the Modified Angoff method is used to set the passing standard for the fourth-year high-stakes OSCE. Students receive a report card after each OSCE outlining their overall performance and performance in individual areas of the examination based on checklist item mapping. In addition, students who fail the high-stakes OSCE receive individualized feedback, and have up to two additional attempts to pass. Psychometric evaluation is used to assess overall exam reliability and checklist item validity and for continuous quality improvement.

Personal and Professional Development in Experiential Education: The KNIGHT ScholaRx Program. Daniel T. Abazia, Rutgers, State University of New Jersey, Chester Lau, Rutgers, The State University of New Jersey, Donna M. Feudo, Rutgers, The State University of New Jersey, Evelyn R. Hermes-DeSantis, Rutgers, The State University of New Jersey, Carol S. Goldin, Rutgers, The State University of New Jersey, Joseph A. Barone, Rutgers, The State University of New Jersey. Objective: An innovative approach to implementing personal and professional development activities in advanced pharmacy practice experience (APPE) education is described. Summary: In late 2013, Capital Health, a two-hospital health-system in New Jersey, began conversations with the Ernest Mario School of Pharmacy (EMSOP) to accommodate a sequential APPE modeled after postgraduate pharmacy residency training for P4 students. The resulting 800 hour block schedule APPE program, KNIGHT ScholaRx (Knowledge Networking Innovation Graduate Health-System Training), incorporates three direct patient care and one hospital practice rotation in addition to a required longitudinal research project completed over the program’s duration. Relative to the predominant model of experiential training for Doctor of Pharmacy students, the KNIGHT ScholaRx program offers a number of opportunities for personal and professional development. Besides increased collaboration among students and continuity of learning experiences, the KNIGHT ScholaRx program enables P4 students to cultivate their professionalism, self-awareness, leadership, and innovative and entrepreneurial problem solving skills. Students are evaluated each rotation as per EMSOP Experiential Program policy. Additionally, longitudinal assessment is conducted through the use of ability based outcomes mapping, Postgraduate training, education, and job placement is also tracked. Despite logistical and scheduling challenges encountered during pilot testing at Capital Health, the program has been well received by students and preceptors and will expand to two additional health-systems in the 2015-2016 academic year. Implications: The KNIGHT ScholaRx program is an innovative APPE model for schools pharmacy to consider as a means of enhancing the achievement of ACPE 2016 Standard 4: Personal and Professional Development.

Personal and Professional Development from Orientation to Graduation. Stephanie F. James, Regis University, Marianne McCollum, Regis University, Jeffrey Lalama, Regis University, Daniel Berlau, Regis University, Miki A. Goldwire, Regis University, Rodney A. Carter, Regis University. The mission of the Regis University School
of Pharmacy (RUSOP) is to educate and prepare students to become professional, principled, and socially responsible pharmacists. Educational outcomes support the mission, calling for the Regis pharmacist to be a knowledgeable, skillful and principled leader in the service of others. Further support is embodied in the school’s primary teaching pedagogy, Team-based Learning™ (TBL). TBL requires students to be fully engaged in the success of their team members, develop productive working relationships, and be open to new ideas and thoughts. These innovative elements of the program position the school to meet one of the most challenging aspects of Standards 2016, Standard 4: the personal and professional development of students. Development begins during Orientation for first-year students. TBL study skills workshops introduce students to the concept of metacognition, assisting with their development as self-directed learners. Self-awareness, personal and professional development continues to expand as students create longitudinal portfolios beginning at matriculation and culminating with a presentation to faculty prior to graduation. The student will document and reflect on their personal and professional development based upon feedback from multiple perspectives: faculty through coursework, preceptors through experiential activities, and colleagues through formal TBL peer evaluations. Perhaps most important is the review the students provide from their own perspective. Students self-assess their own development through reflections based upon feedback received from others and the personal and professional accomplishments documented during portfolio development. Through mission, pedagogy, and reflection, RUSOP students demonstrate personal and professional development from orientation to graduation.

Pharmacy Curriculum Outcomes Assessment (PCOA). Love it or Hate it, It’s Required! Lisa Lebovitz, University of Maryland, Richard N. Dalby, University of Maryland, Cherokee Layson-Wolf, University of Maryland, Andrew Coop, University of Maryland, Shannon R. Tucker, University of Maryland, Joey Mattingly, University of Maryland, Nicole J. Brandt, University of Maryland. Our objective is to plan for implementation of the Pharmacy Curriculum Outcomes Assessment required by ACPE Standards 2016, despite serious reservations and incomplete information. While the rationale for PCOA has wavered, the test administration platform remains uncertain, and many faculty are skeptical of its value and ultimate cost, we found it prudent to consider the logistics of its implementation as a required component of a skills based course, Abilities Lab 6 (Spring, P3, 1 credit). Currently we envision giving a pretest modeled on PCOA example questions, followed by 6-8 recap lectures and comprehensive quizzes covering basic biomedical, pharmaceutical, social, behavioral, administrative and clinical sciences. This pre-PCOA will be delivered using ExamSoft® with question tagging for students to identify areas in need of further study. After this preparation students will complete the PCOA as part of the Abilities Lab 6 course at the end of the semester. Abilities Lab 6 grades will be based on existing course rubrics augmented by quiz scores from PCOA-related questions and credit for completing the PCOA. Schools risk a noncompliant rating on accreditation by not implementing the PCOA. Its use as a measure of curriculum effectiveness is undetermined. This approach is intended to ensure that students give PCOA their best effort despite uncertainty concerning whether scores will be reported before final grades are due to the registrar, how benchmarking data will be collected and distributed, and access to and cost of obtaining any data of the “free” exam.

Professional Development at Loma Linda University School of Pharmacy and the New Accreditation Standards. Nancy E. Kawahara, Loma Linda University, Kathryn T. Knecht, Loma Linda University. The Accreditation Council for Pharmacy Education (ACPE) Accreditation Standards 2016 emphasizes aspects of pharmacy practice that have not always been intentionally addressed in traditional pharmacy school curricula. Prior to the release of the ACPE 2016 Accreditation Standards the Loma Linda University School of Pharmacy had in place a course sequence entitled Professional Development that ran across the entire three years of the didactic curriculum. This positioned us well to incorporate formal training on the four key elements in Standard 4 as well as some of the key elements in Standard 3. The course is currently a zero-credit hour course that meets for 1.5 hours per week approximately 5 weeks of the each of our 10 week quarters. Teaching strategies include classroom lectures, group projects, as well as clinical and non-clinical outreach activities. Students are assessed primarily through the use of reflection statements. This poster will describe in more detail the teaching and learning activities that comprise the course sequence.

Promoting Self-awareness in P1 Professional Skills Courses. Maqual R. Graham, University of Missouri-Kansas City, Linda S. Garavalia, University of Missouri-Kansas City. The first objective of Standard 4 is the development and demonstration of self-awareness across a broad range of behaviors, skills, and non-cognitive characteristics. Asking students to complete validated tests followed by activities and self-reflection is a strategy to develop self-awareness for motivation, metacognition, communication skills, and personality. Surveys/tests were administered and activities implemented. The activities allow students to interact to discuss similarities and differences. Reflection papers document students’ understanding of the personal characteristic in relation to their development. Surveys and instructional strategies implemented in P1 professional skills courses to develop self-awareness are described below. Motivated Strategies for Learning Questionnaire – motivational orientations and use of learning strategies Small group: Should we use the same learning strategies for all subjects and situations? How does knowing that you’ll be assessed affect learning? How do we know when to stop studying for a test? How do we know we’re sufficiently prepared? NEO Personality Inventory – the Big Five personality traits: Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness to Experience Think Pair Share: How do your personality characteristics contribute to your behaviors in School? Social situations? Work? Achieving your personal goals? Relationships? ENGAGE – self-regulation, social engagement and motivation Small group with faculty advisors: discuss results and determine ways to capitalize on strengths and improve weakness Communication Styles Survey – communicating styles under normal and stress conditions Small group: How does your communication style contribute to your behaviors in School? Social situations? Work? Achieving your personal goals? Relationships?

Restructuring the P3 Year to Ensure Student Readiness and Confidence Entering APPE. Tanya L. Ostrogorsky, Oregon State University, Theresa M. Filtz, Oregon State University, Juancho Ramirez, Oregon State University, Gary E. DeLander, Oregon State University. The curricular schedule of the Oregon State University College of Pharmacy’s PharmD program is being revised to include a four week APPE-readiness assessment module in spring term of the third year of a traditional four year quarter system program. Assessment of APPE-readiness will include administration of the PCOA examination, advanced OSCEs using standardized patients, and locally developed assessments for other key areas of knowledge. This module will specifically incorporate simulations and guided case studies to enhance and assess student preparedness in Domains 3 and 4 of the CAPE outcomes (i.e., interprofessional collaboration, cultural sensitivity, self-awareness, patient advocacy, and professionalism). Additionally,
focused updates on pharmacy law, ethics, and recent therapeutic advances will round out student preparedness for APPE. This curricular revision is part of a substantive review of the College of Pharmacy’s professional curriculum, motivated in part to address changes in the 2016 accreditation standards. The guiding principles for revision include enhancing students’ skills and confidence in managing complex patients, and providing opportunities for students to differentiate specific capabilities. The structural changes described are anticipated to significantly advance our capacity to determine APPE-readiness and to identify any student-specific needs for remediation. As importantly, it is believed that this change will provide all students the opportunity to fine-tune their capabilities and fortify their confidence, and the confidence of preceptors, as they enter advanced clinical patient care settings.

Standards 2016: Intentional Student Professional and Leadership Development in the Co-Curriculum. Renae J. Chesnut, Drake University. Objective: To describe the opportunities for professional and leadership development described in Standards 2016. Methods: Drake University has always embodied a culture of student professional and leadership development with several opportunities for student professional and leadership development in the co-curriculum: • Pharmacy & Health Sciences Day (PHS Day), planned and implemented by students for 27+ years, • Student Leadership Development Series (SLDS), a longitudinal academic year program • Collaborative Leadership Council and Drake Rx Unified Group of Students (DRxUGS) which provide multiple leadership and collaboration opportunities • The DELTA Rx Institute develops entrepreneurial leadership skills through a health care innovation competition and a summer internship program. • Student-run honor code system • Professional meeting travel support • White coat (P1) and pinning (P3) ceremonies • University leadership programming widely subscribed to by student pharmacists. Results: PHS Day, attended by 90% of students, is highly rated by students and faculty. Thirty(30) students participate in SLDS each year and 50-80 attend monthly presentations. Approximately 70% of the professional program students become members of DRxUGS and at least one national organization, professional fraternity, or honorary society. Roughly 3-5 students complete the competitive entrepreneurial leadership internship program, and 20-25 students participate in the Next Top Entrepreneur Competition. Conclusion: The College has a wide variety of intention co-curricular opportunities to develop student leadership and professionalism. Ratings on evaluations and the historical high percent of students entering residencies and first choice postgraduate positions indicate that the graduates possess skills sought after by employers and residency directors.

Standards 2016: Raising the bar at Cedarville University. Ginger Cameron, Cedarville University, Rebecca J. Gryka, Cedarville University, Denise Simpson, Cedarville University, Aleda M. Chen, Cedarville University. The ACPE Standards 2016 emphasize interprofessionalism to prepare students for working in healthcare teams, focus on curricular and co-curricular experiences to advance professional development, and underscore the importance of assessment. Cedarville University School of Pharmacy has sought to address these standards by incorporating interprofessional education, curricular and co-curricular professional development opportunities, and outcomes-based assessment. In their first year, students participate in interprofessional communication activities with nursing students. In their third year, they participate in a week-long ACLS training with nursing students and a fast-forward rounds case with nursing and social work students. A weekly, interprofessional trauma unit IPPE with medical and nursing students also is available. Students across the curriculum participate in a co-curricular, interprofessional activity, where students from pharmacy, nursing, medicine and other health professions use motivational interviewing to improve health outcomes in the local homeless population. Secondly, students’ professional development is the focus of several curricular and co-curricular opportunities. For example, student organizations, such as APhA-ASP, have bimonthly officer leadership development sessions. The Leadership and Business course incorporates essential skills by teaching students business skills, communication, professionalism and etiquette. Students create a business plan, attend a formal business dinner and participate in a business proposal Shark Tank event. Finally, all curricular activities are tied to outcomes-based assessment. The outcomes from each course are assessed for student achievement. Those scores are mapped to program outcomes in order to provide an objective and quantifiable way to measure how well we are meeting our learning outcomes and our program goals.

Strategies for Exceeding Standards 11 and 24: Interprofessional Education (IPE) and Assessment. Brian J. Isetts, University of Minnesota, Amy L. Pittenger, University of Minnesota, Kristin K. Janke, University of Minnesota, Caitlin K. Frail, University of Minnesota, Jean Y. Moon, University of Minnesota, Jeannine M. Conway, University of Minnesota, Keri D. Hager, University of Minnesota, Wendy L. St. Peter, University of Minnesota, Marilyn K. Speedie, University of Minnesota. Objective/Intent: To prepare collaboration-ready graduates for team-based care in redesigned healthcare delivery systems. Methods/Process: Pharmacists must collaborate in order to provide the highest levels of care for patients. The preparation of pharmacy graduates to function effectively in high-performing teams focuses on Core Competencies for Interprofessional Collaborative Practice and Lencioni and Tuckman teamwork principles of effective team functioning. A multifaceted strategy is being used for engaging students in developing fundamental team-based skills in combination with IPE awareness and immersion experiences across all four years of the curriculum, recognizing that collaboration-ready is essential to intra-, as well as inter-professional settings. Pharmacy is utilizing the entrustable professional activity (EPA) and milestone strategy to ensure all students are meeting graduation standards for generalist pharmacy practice, using units of professional activity that require collaboration skills. Additionally, EPAs are being applied to Advanced Pharmacy Practice Experience assessment and include effective collaboration as a graduation standard for generalist pharmacy practice. Results/Outcomes: An IPE-focused EPA has been developed as a part of a broader effort to revise experiential education assessment. Students will have to demonstrate achievement of this EPA in: 1) practice with preceptors on each core required rotation (acute, ambulatory, community, institutional) and, 2) in a high stakes objective performance assessment required for graduation. In this respect, students must demonstrate collaboration skills within and across teams throughout both the didactic and experiential curriculum. Implications: Graduates from the University of Minnesota College of Pharmacy will be collaboration-ready for intra- and inter-professional team-based care required in redesigned healthcare delivery systems.

Strategies to Meet ACPE Standards Pertaining to Professional Development. Thomas A. Robertson, Palm Beach Atlantic University, Jamie L. Fairclough, Palm Beach Atlantic University. The Gregory School of Pharmacy will offer a three-course Servant Leadership (SL) series that purposefully incorporates the school’s mission and vision in its design to promote professional and spiritual growth among students, while developing the leadership and advocacy skills needed in the pharmacy profession. The course series will commence with the introduction of key concepts and definitions of professionalism and servant leadership, emphasizing Christian principles through reflective, self-directed learning. Students will be required to maintain a portfolio throughout the
series that documents continued professional development. Prior to and upon completion of the three longitudinal courses, the Professionalism Assessment Tool (PAT) will be administered to students to assess the impact of the series on professional behavior. Additional structural/design elements and assessment strategies for each course in the series will be discussed in detail.

Student Mapping of Biomedical Literature Evaluation Skills in a Pharmacy Curriculum. Soumana C. Nasser, Lebanese American University, Jeanette Nassif, Aline Saad, Lebanese American University, Lamis Karouki, Lebanese American University. Objectives: To map the student learned outcomes (SLO) based on students’ feedback on biomedical literature evaluation competencies and to report longitudinal students’ self-assessment of their achievement of related learning outcomes as they advance from didactic to experiential courses.

Method: The biomedical literature evaluation competencies were mapped in three courses delivered during different pharmacy professional years (PPY): Drug Information and Literature Evaluation (PHA421) offered in PPY-2, Pharmacoeconomics (PHA557) and Professional Pharmacy Practice Experience-Hospital/Drug Information Services (PHA570) offered in PPY-3. Essentially, these courses prepare students to evaluate biomedical literature as they transition from the introductory, reinforced, and then to the applied levels. A unified survey was developed to collect information from students at the beginning and at the completion of these courses. Results: Listed SLOs are consistently achieved through all three courses with more assertion from the students at the completion of the applied experiential course PHA 570 (>90% agree or strongly agree). Results shown at the end of each course indicate continuous improvement from one course to the next, whereby the majority of students replied with ‘agree to strongly agree’ (72%, 96% and 92%) to survey questions that assess their readiness to critically evaluating trials in PHA421, PHA557 and PHA570, respectively. Implications: Students’ self-assessment for their readiness to evaluate the biomedical literature is one of the lifelong self-learning pillars. Once these literature evaluation skills are achieved, students will be able to utilize them continuously to critically think through drug information questions received at the patient bedside and other healthcare settings.

Teaching from the Exam: Evaluating Metacognitive Effects on Student Exam Performance. Adam Pate, The University of Louisiana at Monroe, David J. Caldwell, The University of Louisiana at Monroe, Elizabeth M. Lafitte, The University of Louisiana at Monroe, Brittany Parker, Taylor Epperson. Objective: To determine the impact of metacognitive intervention on exam performance in a first year pharmacy (P1) pathophysiology course. Methods: Consenting P1 students participated in an early intervention program targeting ACPE standard 17.2. Program components included: a presentation introducing formal metacognitive learning strategies and study techniques during P1 orientation, completion of exam wrappers after each exam, and pre- and post-surveys evaluating study and sleep habits. Results: Change in exam performance for students who never completed an exam wrapper was compared to those who completed at least one exam wrapper using an unpaired t-test. We observed the following mean percent changes: 3.6 vs -0.33 (exam 1 to exam 2, p = 0.02); -2.53 vs -1.33 (exam 2 to 3, p = 0.48); -3.69 vs -7.94 (exam 3 to 4, p = 0.04); -17.0 to -13.9 (exam 4 to final, p = 0.21). Among students who completed pre- and post-surveys, the average number of hours studied per exam was 11.6 vs. 12.7, the average number of study days prior to exam was 9.3 vs. 3.9 and the average number of hours spent sleeping per night was 6.75 vs. 6.29. Among students completing the post-survey (n = 32), 68% indicated they would like to see these activities used for other courses and an average score of 7/10 indicated the helpfulness of the intervention. Implications: Teaching from the exam using metacognitive tools may improve exam performance and benefit students.

The Academic Assistant Program Supporting Student Professional Development. Patrick J. Davis, The University of Texas at Austin, Rochelle M. Roberts, The University of Texas at Austin, Sarah Rumbellow, The University of Texas at Austin. CAPE Outcome 3.2 (Educator) is aligned with ACPE Standard 3 in calling for the ability of graduates to “...educate all audiences by determining the most effective and enduring ways to impart information and assess understanding.” For over a decade the UT College of Pharmacy has engaged students in the Academic Assistant Program to support the teaching mission of the College and to provide PharmD students the opportunity to develop as educators. Academic Assistants (AA’s) provide course logistics support (e.g., taking attendance, cross-campus technology, quiz administration). Advanced Academic Assistants (AAA’s) have teaching responsibilities in didactic and laboratory courses (e.g., ePortfolio reviewers; synchronous or asynchronous handling of course inquiries, group tutoring, pre-exam and/or post-exam reviews; lab instruction; i.e., the same roles as graduate student TA’s, but AAA’s are not allowed to assign final grades). Students are compensated for 5-7 hours of effort per week. History has shown that student participation in our one-on-one Tutor’s Program catalyzes interest in the Academic Assistant Program (AA’s and AAA’s), which further catalyzes interest in our P4 Academic Internship (AI). We refer to the progression from Tutor -> AA -> AAA -> Academic Intern as our ‘Academic Track’ in the College. Survey analysis shows a high level of faculty satisfaction for the teaching support this program provides, and for the opportunity to work with students pursuing academic interests. There is also a high level of student satisfaction based on rewarding opportunities to teach and to explore a possible academic career.

The Face of Pharmacy Legislative Day: A Professional Advocacy Co-Curricular Experience. Katherine K. Orr, The University of Rhode Island, Jeffrey P. Bratberg, The University of Rhode Island, Anita N. Jackson, The University of Rhode Island. The purpose of this abstract is to describe a co-curricular legislative experience that can be mapped to the 2016 ACPE Standards 3.2, 4.2, and 4.4. Since 2004, the URI College of Pharmacy has participated in the Annual Face of Pharmacy event held at the Rhode Island State House. This event brings student pharmacists, faculty and members of state pharmacists associations together to rally behind issues and legislation affecting pharmacy practice. Demonstration tables, staffed by APPE students, preceptors and faculty showcase services to the legislators such as: hypertension screenings, diabetes education, body fat analysis, immunizations, medication therapy management services, and patient counseling. A speaking program highlights legislation and issues important to pharmacy and the future of health care. Past speakers have included Directors of the RI Department of Health, Governors, Lieutenant Governors, state Senators, state Representatives, members and staff from the Board of Pharmacy, Presidents of both state pharmacy associations (RIPA and RISHP), and selected student pharmacist leaders. Past Gubernatorial proclamations and citations have been issued to commemorate the event and pharmacists’ role in patient care. Throughout the afternoon, student pharmacists have the opportunity to interact with pharmacists at the tables, learn about legislative initiatives that impact pharmacy, and meet with state legislators. Student pharmacists have also been recognized on the House and Senate floors as the sessions open. To formally incorporate this experience into our curriculum as a co-curricular standard, students will be encouraged to perform a formal writing reflection after participation to self-evaluate their professional development.

The Fort Wayne Area Interprofessional Education Consortium: Integration of Multidisciplinary Collaboration for Graduate Health Care Students. Ahmed Abdelmageed, Manchester University, Tracy L. Brooks, Manchester University, Beth Bright, Huntington University, Dawn LaBarbera, University of Saint Francis, Deborah Poling, Indiana University- Purdue University Fort Wayne, Kim Beran-Shepler, Trine University. Interprofessional education (IPE) is an essential component of teamwork and collaboration as recommended by the Pew Health Professions Commission, the Institute of Healthcare Improvement and the Institute of Medicine. IPE is now mandated by accrediting organizations in healthcare education. ACPE Standards 2016 requires that interprofessional education involve the development of competency in interprofessional team dynamics, education and practice. The Fort Wayne Area Interprofessional Education Consortium (FWAIPEC) is a unique collaboration across multiple educational entities for the education of graduate health care students. FWAIPEC includes seven distinct graduate medical education institutions representing programs for pharmacy, physician assistant, nurse practitioner, nurse educator, medical student, family practice residency, occupational therapy and physical therapy programs. The consortium successfully conducts a three and two-session IPE seminar series for its first and second year students respectively. The program has grown from 60 learners a session to approximately 250 learners a session. Each session is designed to combine healthcare students from multiple disciplines and institutions for a series of team-based educational activities to foster interprofessional collaboration and education. This is the first formalized effort of its kind in the region.

The HRDKA Exam to Evaluate Student Readiness for Advanced Pharmacy Practice Experience at TUTHC-SOP. Sachin Shah, Texas Tech University Health Sciences Center, Cole Kildow, Texas Tech University Health Sciences Center, Iveryl Peng, Texas Tech University Health Sciences Center. Background: The primary objectives of ACPE Standard 2016 are for pharmacy students to be ready for Advanced Pharmacy Practice Experience (APPE), practice, and patient care team contribution. Objective: To develop a reliable assessment that evaluates pharmacy students’ basic drug knowledge and readiness for progression to APPE. Methods: A minimal competency High Risk Drug Knowledge Assessment (HRDKA) exam was developed to evaluate student basic knowledge of top 200 drugs (in-patient and outpatient) utilized in the APPE. The exam assessed student knowledge in seven key pre-defined drug knowledge areas. The HRDKA exam was administered annually in the month of January to 3rd year pharmacy students. Score of 75% or higher was required for student to progress in APPE of the P4 curriculum. Test of reliabilities including Kuder-Richardson 20 (KR-20) and Cronbach coefficient alpha were measured.

Results: This study evaluated the findings of HRDKA exams administered in 2014 and 2015. All together 312 student exam results were evaluated. Year 2014 exam consisted of 113 and year 2015 exam, 135 question items. The average student scores were 90.2% (SD 5.8%) and 89.92% (SD 6.2%) for year 2014 and 2015, respectively. All together 3 students failed the HRDKA exam. KR-20 and Cronbach coefficient alpha, both were 0.75 for year 2014, and 0.84 for year 2015. Conclusions: The HRDKA exam provides a potentially reliable tool to evaluate student drug knowledge and readiness for APPE. It provides a reliable opportunity to identify students needing remediation prior to progression to the 4th year of pharmacy curriculum.

The Integration of Interprofessional Education in an Established Pharm.D. Curriculum. Cynthia K. Kirkwood, Virginia Commonwealth University, Veronika P. Shuford, Virginia Commonwealth University, Laura M. Frankart, Virginia Commonwealth University, Kelly Lockman, Virginia Commonwealth University. In order for pharmacy students to be contributing members of interprofessional teams that provide patient-centered care, students must learn the dynamics of teamwork both in the classroom and through experiential practice. Although the curriculum at VCU included introductory and advanced pharmacy practice experiences, it lacked didactic training on teamwork. Pharmacy faculty collaborated with the VCU Center for Interprofessional Education (IPE) and Collaborative Care to create an interprofessional education model for health sciences schools to foster and facilitate a culture of collaboration to improve healthcare outcomes. The Center is in year three of an Interprofessional Case Series for medical, dental, nursing, pharmacy, and allied health students. The Center has adopted a developmental approach to evaluating learning outcomes for IPE and has worked toward incorporating assessment measures extending beyond student satisfaction and self-reported data. A sample of early learners from each school participated in a study exploring cognitions about teamwork. A pretest/posttest design with a video-provoked assessment questionnaire was used to evaluate knowledge gains related to the foundational IPE case series in 2013-14. Results showed that pharmacy students, who participated in all five sessions of this series, had higher knowledge gains than students from other disciplines, whose attendance was more sporadic. The Center developed two 1-credit courses (IPEC 501 Foundations of Interprofessional Practice and IPEC 502 Interprofessional Quality Improvement and Patient Safety) to be required in the first and second professional pharmacy years, respectively, beginning fall 2015. The curriculum was modified to integrate IPE courses into Pharm.D. program.

The PCOA Effect: The Cincinnati Experience. Shauna M. Buring, University of Cincinnati, Bradley E. Hein, University of Cincinnati, Nicholas J. Messinger, University of Cincinnati, Patricia R. Wigle, University of Cincinnati. The PCOA exam has been administered to P3 students at the JLWCOP since 2012. The decision to use PCOA was multi-factorial including to: identify content areas that needed strengthening (curricular assessment), help students self-evaluate areas of strength and areas to improve (formative assessment), utilize national benchmarking data, and serve as one component of a comprehensive assessment plan of student achievement. The communication plan to students about PCOA included providing the rationale for the exam, familiarizing them with the content areas of the exam, reviewing sample questions and formats, and advising them how the exam could benefit each of them. Students were instructed they would meet with an individual faculty member who would review their individual score report and advise them how to leverage their upcoming APPE to help improve any knowledge gaps. Data from the four years indicate students consistently underperformed in the areas of immunology and pharmacogenomics; a curricular deficit which is being addressed. Based on retrospective analysis, criteria that include PCOA performance have been developed for high stakes implementation in 2016 to determine which students will need remediation prior to APPE. The criteria is a combination of GPA and PCOA performance. Correlation shows that PCOA is moderately correlated with both PharmD GPA as well as subsequent NAPLEX performance. In addition to punitive measures, incentives for excellent performance have been developed for implementation in 2016. In coordination with specific competency assessments, course-embedded assessments, and OSCEs, the PCOA is one component of PASS (Plan for Assessment of Student Success).

The Pharmacist-in-Training (PhIT) Portfolio Program. Sarah L. Scarpace, Albany College of Pharmacy and Health Sciences, Laurie L. Briceland, Albany College of Pharmacy and Health Sciences. It takes more than didactic and experiential coursework for a student
pharmacist to develop the knowledge, skills, attitudes, and behaviors necessary to be a pharmacist. The Pharmacist-in-Training (PhIT) Portfolio is an opportunity for student pharmacists to reflect on their experiences in various co-curricular opportunities while enhancing their personal and professional development in a systematic way. Activities which are difficult to include in traditional didactic and experiential courses may be included in the portfolio. Experiences will be coordinated and assessed, where applicable, by the Offices of Experiential Education and Pharmacy Professional Affairs and will include (but not be limited to): annual completion of a continuous professional development plan; pharmacy advocacy; participation in professional organization meetings; participation in guest speaker presentations that foster professional, academic, and personal growth and awareness of contemporary pharmacy practice issues. P1 Orientation activities and reflections on the White Coat Ceremony will also be captured in the PhIT portfolio. Students will enroll in this program in the Fall of the P1 year and will complete the assignments by the end of the Spring of the P3 year. A personalized certificate which describes the unique activities completed by the student to achieve the goals of the PhIT Portfolio will be awarded at a Pinning Ceremony at the end of the P3 year. Reflection papers will culminate in an annual update of the student’s curriculum vitae and a cover letter designed to help the student articulate his/her individualized professional development goals.

The Tapestry of a Successful Innovative IPPE-II Restructured Course. Donna S. Robinson, Xavier University of Louisiana. The focus of this paper is to discuss the evolution of an introductory experiential education course – from pitfalls to PURPOSE. Between Fall 2007 and Spring 2012, second-year students completed 50 hours per semester of Community and Institutional IPPEs with volunteer preceptors. These preceptors were instructed to expose students to Community and Institutional Pharmacy Practice. Thus, topics were taught at their own discretion. Feedback from preceptors indicated students were unprepared for the experiential training. In order to ensure a more uniform experience meeting specific institutional and community pharmacy objectives and to better prepare students for experiential training, the IPPE-II Program was restructured to include guided learning. Through recommendations by preceptors and students upon evaluation of the course, changes were piloted Spring 2012 and fully implemented Fall 2012. The re-structured IPPE-II Program introduces guided learning prior to and during IPPE-II Community and Institutional Rotations. Innovative course restructuring ensures student introduction to key educational outcomes through course lecture and simulation lab, health fairs and faculty-led site visits. Reflections and OSCEs are used to assess student learning, while opinion surveys are used to determine student satisfaction with the IPPE-II experience. Assessment results demonstrate increased knowledge of basic pharmacy practices prior to reporting to rotations, preparation that is valuable to the experiential learning component. Lessons learned during the course restructuring support guided learning of fundamental pharmacy practice objectives through lecture and lab, which prepares students for rotations, ultimately affording a foundation to build competence and confidence as students matriculate through the College.

UUSOP’s Innovative Approaches to Standards 2016. Kim M. Jones, Union University; Ashok E. Philip, Union University; George A. DeMaagd, Union University; Mark A. Stephens, Union University; Andrew Martin, Union University; Blake Watkins, Union University. The Union University School of Pharmacy (UUSOP) is evaluating the existing curriculum to ensure alignment with the newly released ACPE Standards 2016. This poster will primarily focus on our institution’s approach to Standards 4 (Personal and Professional Development) and 11 (Interprofessional Education). Current curricular and co-curricular experiences that provide opportunities for students to enhance personal and professional skills, as well as attitudes and attributes necessary for delivery of patient-centered care, are being examined. Existing activities range from membership and leadership in professional organizations to service to the UUSOP as a student ambassador. Efforts are ongoing to expand existing Interprofessional Education (IPE) activities within the pre-APPE and APPE curriculum. Particularly, interprofessional patient cases utilizing high-fidelity patient simulators are being developed for the second and third-year Applied Therapeutics courses. These IPE cases will involve pharmacy, nursing and social work students, as well as medical residents. The corresponding assessment strategies, tools and processes aligning with these two initiatives will be presented in this poster.

University of Wyoming School of Pharmacy Innovatively Addressing ACPE Standards 2016. Travis E. Brown, University of Wyoming, Cara A. Harshberger, University of Wyoming, Carol J. Kobulnicky, University of Wyoming, Michelle L. Hilaire, University of Wyoming, Lauren R. Biehle, University of Wyoming, Jaime R. Bobinmyer-Hornecker, University of Wyoming, Tonja M. Woods, University of Wyoming, Janelle L. Krueger, University of Wyoming, Allison Mann, University of Wyoming. The University of Wyoming School of Pharmacy (SOP) is in the College of Health Sciences, which includes Nursing, Social Work, Kinesiology and Health, Communication Disorders, and Medical Education. Over the last several years, the SOP has initiated many innovative projects, several of which meet the new ACPE Standards 2016. Since 2014, SOP faculty members participate in the Annual Interprofessional Education (IPE) Retreat with many leading charges in our IPE efforts. Faculty are helping to formalize our strategic plan for IPE as a College, providing didactic IPE embedded activities/assignments and practice opportunities, and assessing current IPE offerings (standards 3, 11). As part of the SOP’s strategic planning, committee work is tied to the OGSM (objectives, goals, strategies and measures). This process guides progress and informs each committee’s proposed budget (standard 7). Assessment activities occur year round and vary depending upon the information solicited. New “Live Assessments” over lunch with students have generated immediate feedback with constructive discussion to address questions and concerns related to staffing, curricular change, flipped classrooms, rotations, lab space and supplies, and accreditation. Based on responses to these sessions, recommendations are efficiently provided to the faculty to address concerns (standards 24, 25). Last, all third year students participate in a faculty-led patient-centered care experience in which they round on an inpatient interdisciplinary team. Students navigate the medical record to assess patient information and present a verbal and written assessment and plan (standard 12).

Use of Performance-based Assessments in a Clinical Skills and Simulation Center. Paul O’Donnell, Midwestern University/Downers Grove, Jennifer J. D’Souza, Midwestern University/Downers Grove, Kelly Lempicki, Midwestern University/Downers Grove, Jennifer L. Mazan, Midwestern University/Downers Grove, Christie Schumacher, Midwestern University/Downers Grove, Carrie A. Sincak, Midwestern University/Downers Grove. Midwestern University Chicago College of Pharmacy has utilized simulation-based activities to train pharmacy students in clinical skills and patient care for several years. In 2015, the University opened a new Clinical Skills and Simulation Center (CSC) to provide facilities and dedicated staff to enable a variety of realistic simulation-based activities. The CSC offers physical environments designed to mimic various healthcare settings, actors trained as standardized patients, high-fidelity mannequins, and a variety of task
 trainers. Activities in the CSC are ideal for performance-based assessments of students. Several rubrics and other scoring tools have been developed in multiple courses to assess student performance in simulated activities. These tools assess both interpersonal and clinical skills. Interpersonal skills include verbal and non-verbal communication, listening, empathy, and professionalism. Examples of clinical skills that have been assessed include measurement of blood pressure and heart rate, counseling about proper inhaler technique and insulin injections, and performance of a diabetic foot exam. The accuracy of content and appropriateness of recommendations made during these encounters have also been assessed. Both trained standardized patients and faculty have utilized these assessment tools to provide formative and summative evaluations of students’ performance. In many of these activities, students have completed a self-assessment of their content and technique by viewing a video of their encounter. Student opinions regarding these simulated activities have been overwhelmingly positive. Plans to incorporate more simulation-based activities and performance-based assessments into the curriculum are ongoing.

**Using Community Partnerships To Develop Co-Curricular Initiatives that Promote the Core Values of Our School.** Michael J. Avaltroni, Fairleigh Dickinson University, Anastasia M. Rivkin, Fairleigh Dickinson University, Barbara A. Rossi, Fairleigh Dickinson University, Chadwin Sandifer, Fairleigh Dickinson University. The Fairleigh Dickinson University School of Pharmacy has worked to develop a set of co-curricular initiatives to provide opportunities for the entire community of faculty, staff and students to engage in community, public health and professional advocacy efforts that advance the program and profession. The School has established a series of partnerships that include nationally recognized charities (such as Give Kids the World, the American Heart Association), community health organizations (such as Zufall Health Center, Atlantic Health Systems), advocacy and awareness organizations (such as Morris County Prevention is Key and Partnership for a Drug Free New Jersey) and other organizations that provide opportunities for the School community to actively live out and practice the concepts surrounding its five core values (Think, Lead, Advocate, Communicate, Implement). These partnerships and opportunities include both directly relevant concepts that relate to pharmacy education and patient advocacy, as well as indirect development opportunities, such as self-awareness, innovation, compassion and communication. The result has been the school’s development of a required, longitudinal community engagement requirement for all students, with opportunities for participation, reflection and collaboration among the members of the School’s community, including its students, faculty, staff, preceptors and leadership.

**Using Interprofessional Education as a Means to Enhance Personal and Professional Development.** Matt Zak, St. John Fisher College, Anthony T. Corigliano, St. John Fisher College, Jane M. Souza, St. John Fisher College, Keith DelMonte, St. John Fisher College, Andrea DiGiorgio, St. John Fisher College, Christine R. Birnie, St. John Fisher College, Anand Sridhar, St. John Fisher College. The ACPE 2016 standards have increased emphasis on Interprofessional Education (IPE) and skills in the affective domain such as personal and professional development. The Wegmans School of Pharmacy (WSOP) at St. John Fisher College has prepared for the transition to the new standards by incorporating IPE into the pre-APPE (Advanced Pharmacy Practice Experience) curriculum so that students improve their communication skills, plan for their professional development, and learn to deal effectively with other healthcare providers. WSOP has incorporated TeamSTEPPS® training into its curriculum. TeamSTEPPS® is an evidence-based teamwork system designed to improve communication and teamwork skills among healthcare professionals. Training is comprised of preparatory work, a 4-hour workshop, and learning scenarios in groups. Both nursing and pharmacy faculty co-present modules using the TeamSTEPPS® slides followed by an online post-work assessment and course evaluation surveys. WSOP students also experience several thorough and unique exercises during their Introduction to Pharmacy Practice Experiences (IPPE) III and IV. The IPPE-III course places students in a long-term care facility, each paired with a patient. Students spend over 10 hours on-site interviewing the patient, working up a comprehensive medication plan, and interacting with members of the healthcare team. 15 hours of IPPE-III classroom time supplement this training through lectures offered by different members of the health care team sharing their roles and perspectives. The IPPE-IV class offers additional classroom instruction focused on the skills needed to succeed on advanced rotations. This course requires an additional 30 hours onsite, working closely with the WSOP clinical faculty.

**Using the PCOA as a High Stakes Exam in Assessing Pre-APPE Readiness.** Elizabeth A. Coyle, University of Houston, Catherine L. Hatfield, University of Houston, Tara L. Jenkins, University of Houston. The University of Houston College of Pharmacy (UHCOP) has utilized a high stakes examination for P3 students to progress to APPEs for over 12 years with the “homegrown” Milemarker Exam. In 2014, the school replaced the Milemarker with the PCOA in assessing APPE readiness. The students are introduced to the PCOA in their P1 and P2 years as a formative assessment of their learning progress. In the P3 year the students must meet minimal competency which is the National Scaled Score (NSS) for P3s minus the standard deviation of their class’s scaled scores. The exam is given in January during the first exam block for the PCOA. Scores are received by mid-March, and those not meeting minimal competency have one more chance to meet the assessment competency by retaking the PCOA in April. If they meet minimum competency on this retake they are able to start APPEs in block 1. Those not successful must do self-remediation and retake the PCOA until successful. In the first year of implementation, there was a clear correlation in those who were unsuccessful in the PCOA and APPE readiness. Therefore at UHCOP we feel the PCOA as a high stakes exam in the P3 year is a valid measurement of APPE success in addition to other curricular assessments.

**Utilization of the Birkman Method® Assessment by Students and Faculty in a Multi-Campus College of Pharmacy.** Whitney Maxwell, South Carolina College of Pharmacy, Amy D. Grant, South Carolina College of Pharmacy, Cathy L. Worrall, South Carolina College of Pharmacy, Robert Davis, South Carolina College of Pharmacy, Bryan Ziegler, South Carolina College of Pharmacy, Patricia H. Fabel, South Carolina College of Pharmacy, Kristy L. Brittain, South Carolina College of Pharmacy, Breanne Martinez, P. Brandon Bookstaver, South Carolina College of Pharmacy, Kelly R. Ragucci, South Carolina College of Pharmacy, Philip D. Hall, South Carolina College of Pharmacy, Randall C. Rowen, South Carolina College of Pharmacy. **Objectives:** Objectives of this study include describing student and faculty outcomes associated with using the Birkman Method®, a validated self-perception, social perception, and occupational interest assessment tool, to provide four professional development interventions in a multi-campus college of pharmacy. Methods: Following IRB approval, faculty and students were recruited for participation in Birkman Method® testing and training programs. The impact of four professional development interventions were evaluated, including a basic faculty development and teambuilding intervention, a basic student training intervention, a student group selection method intervention, and an intensive student training intervention. **Results:**
Preliminary data analysis suggests that faculty participating in Birkman faculty development activities experienced significant improvements in confidence related to coaching and leadership style and improvements in confidence in describing preferred work environment conditions (p<0.05 for both endpoints). The basic student training intervention resulted in a significant 1.58 point improvement in mean self-awareness accuracy score (95% CI: 1.25-1.91, p<0.0001). Using a Birkman-based approach to student group selection in a team-based learning course also resulted in a reduction in group conflicts by 3.5 per team at the semester midpoint. Finally, a group of students engaging in an intensive Birkman intervention experienced numerically smaller declines in emotional intelligence throughout the course of a semester as compared with a control group. Implications: A Birkman Method® testing and training program is an effective development experience for faculty and students, and may be useful for accomplishing ACPE 2016 Standards 3 and 4 affective domain elements, particularly in the arenas of self-awareness and communication.

What Students Can Do with What They Know: Performance-Based Assessment Across the Curriculum. Katherine A. Kelley, The Ohio State University, Kelli D. Barnes, The Ohio State University, Stuart J. Beatty, The Ohio State University, Colleen A. Dula, The Ohio State University, Anna C. Haas-Gehres, The Ohio State University, Alexa M. Sevin, The Ohio State University. Performance-based assessments (PBAs) are powerful tools for demonstrating what students can do with what they know as well as ascertaining that students are achieving the outcomes of our PharmD curriculum. Various forms of PBAs are used during the second and third years of a PharmD program. In the P2 year, students learn necessary skills including dispensing, physical assessment, communication, and medication therapy management. Students are assessed on these skills during course work and an end of the year PBA. Third year students participate in a communication and documentation PBA as well as an end-of-the-year capstone course. Capstone contains two objective structured clinical exams one focused on inpatient and the other on ambulatory care skills. Additionally, two simulated patient interview, plan development, and documentation performance-based assessments are completed during Capstone. During the second and third years of the program, students interact with standardized patients to practice their patient interviewing and physical assessment skills. Standardized patients are trained to provide clinical feedback utilizing rubrics and checklists. Many of these activities are recorded and students are given the opportunity to review their video and reflect on the experience. These reflection assignments allow students to identify their strengths and areas for improvement. Following their interactions with standardized patients, students are asked to apply didactic knowledge learned in the classroom to the information they gathered from the standardized patient to synthesize a patient care plan.

2014-2015 ACADEMIC RESEARCH FELLOWS PROGRAM
A Faculty Development Series in Research: Engaging Pharmacy Practice Faculty and the Office of Sponsored Programs. Susan L. Mercer, Lipscomb University, J. Richard Thompson, Lipscomb University, Robyn Saakian, Lipscomb University, Christopher R. McCurdy, The University of Mississippi, Roger L. Davis, Lipscomb University. Objectives: The focus of this Academic Research Fellows Program (ARFP) project was to rejuvenate the Lipscomb University Office of Sponsored Projects (OSP) and to encourage Pharmacy Practice department faculty to pursue external funding for practice-based research. Methods: A four-session faculty development series was developed in collaboration with the Dean, OSP and the Pharmacy Practice department chair. Session 1 provided an overview of OSP and identified federal and non-federal funding sources. Session 2 focused on writing the research components of a grant proposal, whereas session 3 described the supporting documentation. Practice faculty members were required to attend the live sessions with the expectation to submit a 2-page grant proposal. Faculty proposals were subjected to internal and external reviews in session 4. Sessions 1-3 were recorded for future faculty use and dissemination to other departments as necessary, creating a University-wide resource. Results: Faculty development sessions were held in the evening to avoid academic and practice site conflicts; 68% of practice faculty attended all three live sessions, 24% attended two sessions, 4% attended one session, and 4% (n = 1) were unable to attend due to family obligations. Forty percent of practice faculty submitted a research proposal for review. Additionally, 60% of practice faculty set up new accounts in GrantForward to receive funding opportunity announcements. Implications: This project has engaged OSP with practice faculty, informed both parties on practice-based funding opportunities and has generated a repeatable grant writing workshop series. A long term project metric will be the number of practice-based grants submitted through OSP.

A Pilot Proposal for the Development of a Pharmacy Practice Research Training Model for First-Year Faculty. Anthony E. Zimmermann, Western New England University. Introduction: A recent survey showed that first-year (and junior) pharmacy practice faculty at most colleges or schools of pharmacy (COP/SOP) are not well prepared to design and implement an individual clinical research program. Regardless of prior residency training experience and irrespective of being in a tenure- or non-tenure-track position, these faculty indicated a lack of confidence in initiation of a research project. Currently, programs to develop these faculty members in a consistent manner across all COP/SOP do not exist. Objective: The objective of this Academic Research Fellowship project is to develop a cost-effective national program that can be used by any COP/SOP to ensure basic research (clinical and/or educational) expectations and competencies for all first-year and junior pharmacy practice faculty are met. This program could significantly improve the early success of these practice faculty. Methods: (1) Assess the perception of the problem, what measures have been taken previously, and if any of these measures were successful; (2) collect background information from COP/SOP to determine current programs, if any, for assisting first-year and junior practice faculty in developing essential research skills; (3) identify essential research skills needed by these faculty; (4) outline a specific yearlong program of required courses, professional development, and structured mentoring necessary to assist young faculty; (5) determine what institutional resources are generally available and the cost of accomplishing this yearlong training program; (6) develop criteria to measure the success of implementing such a program in the short and long term.

Best Practices for Promoting High Level Scholarship in Pharmacy Practice Departments. Cherry W. Jackson, Auburn University, Jordan L. Cohen, The University of Iowa, David J. Rise, Auburn University. Barriers to scholarship among Pharmacy Practice faculty continue to be a universal concern and have been outlined by numerous authors over the past decade. Additionally, since curriculums and post-graduate residencies for Doctor of Pharmacy students evolved with less research emphasis beginning around the year 2000, the understanding of the role that research plays in academia for those graduates has been diluted to some degree, despite the expectation by accrediting bodies for all academicians to participate in scholarly activity. Despite these
Creating a Program in Pharmaceutical Entrepreneurship. Hugh D. Smyth, The University of Texas at Austin. Intent: Major research universities are embracing the importance of entrepreneurship. The communities served are also recognizing the economic and social value of university-generated innovation, commercialization, and entrepreneurship. A Program in Pharmaceutical Entrepreneurship (PE) will help to (1) train students (Pharm.D. and graduate), pharmacists, and scientists; and (2) foster faculty entrepreneurship and academic-private sector partnerships. Process: The creation of the program will be accomplished in four steps. First, an advisory committee with broad and exemplary membership will be formed. The committee will be responsible for addressing programmatic priorities and engaging additional funding. Secondly, the program will launch an internship program for students. Thirdly, a Ph.D. in Pharmaceutical Sciences with a track in entrepreneurship, facilitated by the internship program, will be developed. Finally, the existing entrepreneurial faculty resources in addition to the training programs will lead to the formation of a university-wide Center for Pharmaceutical Entrepreneurship. Outcomes: Program success will be determined by assessing entrepreneurial activities and outcomes before and after implementation of the program. Metrics will include (1) internship experiences survey; (2) comparison to peers of entrepreneurial activities resulting from internships; (3) number of students recruited into the PE Ph.D. track; (4) comparison to peers of entrepreneurial activities for faculty/pharmacists involved; (5) number of startups/new business development; and (6) total amount of funding awarded from academic private sector partnerships. Implications: The program has the potential to cultivate a rich entrepreneurial environment within the College of Pharmacy and formally provide training to the next generation of students, pharmacists, and faculty.

Developing a Webinar-Based Research Training Series for Pharmacy Residents. Michael J. Miller, The University of Oklahoma, Daniel J. Cobaugh, ASHP Foundation, Kimberly A. Galt, Creighton University, IoLaine R. Drauglis, The University of Oklahoma. Background: Demand for evidence-based healthcare decision-making requires pharmacists to have practice-based research skills. Pharmacy residency programs facilitate workforce development to meet this need. Residents are required to “demonstrate ability to evaluate and investigate practice, review data, and assimilate scientific evidence to improve patient care and/or the medication use system.” Practice-based research training varies and is limited by available expertise in each residency program. Objectives: (1) Perform a research training needs assessment of relevant stakeholders; (2) develop a webinar series in practice-based research for training pharmacy practice residents; (3) assess diffusion, satisfaction, and future needs of the webinar series after implementation. Methods: A research needs assessment will be developed and conducted with pharmacy residency directors. The data collection instrument will be assessed for face and content validity, pretested, revised and then distributed to a representative sample of residency directors. Results will guide webinar topic selection and content experts will be recruited. The webinar series will be built in modular format to allow for inclusion of additional topics. The webinar series will offer continuing education credit and a certificate of completion. The ASHP Foundation will maintain the program to allow for universal access. A post-implementation assessment will assess diffusion, satisfaction, and future needs for the webinar program within one year. Anticipated Results: A webinar-based research training series will provide an introduction to practice-based research for pharmacy practice residents. This webinar series will provide much needed uniformity to pharmacy resident practice-based research training regardless of resources available to individual residency programs.

Developing Clinician-Scientists: A Focus on the Department of Clinical Pharmacy. Jennifer Cocoloba, University of California San Francisco, B. Joseph Guglielmo, University of California San Francisco, Ruth Greenblatt, University of California San Francisco. Introduction: There are many opportunities to develop the role of pharmacist scientists on the University of California San Francisco campus. Enhancing research opportunities for the UCSF School of Pharmacy, Department of Clinical Pharmacy will increase ability and visibility of faculty for research collaboration and can potentially increase extramural funding. Description: As part of a long-term plan to enhance departmental research, initial goals included to (1) create a formal grantwriting program; (2) make research training resources accessible; and (3) raise awareness of research conducted in the Department. A 16-week, structured grantwriting program was presented to the Chair of the Department. One faculty member was selected to participate for Winter 2015 and a KL2 and K23 application were successfully submitted during the time period. Resources for research training were gathered. Optimal ways to display this information are still being explored. Lastly, monthly Department research seminars featuring a 30 minute faculty research talk and a 30 minute discussion of a research training topic were initiated Fall of 2014 and continue through the present. Lessons Learned and Future Directions: Successful grant submission through the structured grantwriting program requires strict adherence to faculty release time and intensive mentoring. A process for selecting 1-2 faculty to participate per cycle is being developed. Research training resources are best housed on a non-static webpage; consideration must be given to ease of updating content. Lunch seminars successfully allow faculty to share their research. Offering food and advertising to a broader audience are key to attendance and fostering outside collaborations.

Development and Implementation of a Pharmaceutical Product Development Core Facility within Texas A&M University. Srinath Palakurthi, Texas A&M University Health Science Center, David E. Potter, Texas A&M University Health Science Center. Texas A&M Rangel College of Pharmacy (RCOP) represents the only pharmacy program across the Texas A&M multicampus system. Its mission is to provide superior pharmacy care by conducting basic, clinical and social science research that translates into improved pharmacy education, research and therapeutic outcomes. Our unique location in South Texas and our collaborative culture of team science present an opportunity to develop a core Product Development Facility that serves RCOP and many other colleges and centers across our University. The framework for this addition to the University’s scientific infrastructure is provided by existing collaborations between RCOP faculty and scientists from other departments on the main campus in College Station. The goals of this project are to: (1) identify faculty research expertise, strengthen collaborative relationships and build a research
team and infrastructure; (2) generate support for this concept within RCOP and across the Texas A&M System; (3) develop a business model for this facility that promotes recovery of costs from funded investigators and provides support for new initiatives that produce preliminary data potentially leading to external funding; and (4) identify funding and institutional support to establish this core facility with sub-cores built on existing RCOP strengths of formulation, analytical services and pharmacokinetics. To that end, we will work with RCOP, other scientific units on the Kingsville campus and research administration on the College Station campus to endorse the critical importance of this core and identify funding sources to develop this core with appropriate equipment and technical support.

Development of a Public Health Pharmacy Undergraduate Program. Christian B. Albano, Concordia University Wisconsin, Dean Ameson, Concordia University Wisconsin, Robert Burlage, Concordia University Wisconsin. The interaction and confluence of environmental, social, economic, and political forces are transforming global, population, and public health. Pharmacy can have an integral, transformative, and recognizable role in this transformation. By recognizing and adapting to this needed paradigm shift, pharmacy can provide many opportunities within this global health workforce. This includes improving individual health, population/community health, and the healthcare delivery system. From the threats of obesity, tobacco use, infectious diseases, and other chronic diseases, the science and art of public health can improve upon these universal harms. Moreover, the recent reports on the declining public health workforce and the call for the training of them signify a pressing need. Pharmacy must recognize and develop innovative and effective ways to incorporate population and public health into pharmacy education and practice. In recent years the growth of graduate programs, in particular the Masters in Public Health (MPH) degree, in public health has increased; however, the growth at the undergraduate level has not been commensurate. When administered or offered by a school of pharmacy, a focus on undergraduate public health education has tremendous upside for not only improving health outcomes but for training the next generation of population- and public-health focused pharmacists. The mandates of the Patient Protection and Affordable Care Act prime and position pharmacy to new stratospheres in pharmacy, medicine, and public health. This poster shall outline and demonstrate the benefits, challenges, and an implementation strategy of a school of pharmacy in administering an undergraduate public health program.

Development of an Interdisciplinary, Translational Workforce in Biomedical Research. Kathleen Rodgers, University of Southern California. The University of Southern California School of Pharmacy offers several laboratory-based master’s and PhD programs that often involve individual or pairs of mentors working with students. Additionally, the International Regulatory Science Center (IRSC) and Schaefer Center offer a range of programs in regulatory science and pharmacoconomics and health care policy, respectively. The goal of this project is to integrate student-led teams into these programs and expand training opportunities of students in laboratory-based programs to fill the need for scientists trained in multiple disciplines and with interdisciplinary skill sets. Surveys of industry partners have shown that, while students are well trained technically, they lack many essential attributes for the industry workforce, particularly communication (writing and verbal) and professionalism. These skills are also essential in academia and effective team research. Therefore, in addition to building interdisciplinary teams, our goal is to strengthen students in these areas through increased research and workshops in order to make students more marketable and valuable to future employers. Finally, we seek to increase the quality of future researchers through wet lab training in Good Laboratory Practices and Analytical Validation. When in place, these opportunities should provide students with the ability to have a greater impact through their research career. Metrics to evaluate effectiveness of this program will include formation of interdisciplinary groups as well as student training for future employment.

Drug and Patient Safety Studies: Methods and Implementation. Fadia T. Shaya, University of Maryland. Background: The majority of healthcare is delivered in ambulatory care settings, where fragmented care, and high medication use prevalence may compromise patient safety. In particular, hypoglycemic diabetic agents lead to adverse drug events (ADE) among patients treated in outpatient settings. Objective: The goals of this project are to: (1) identify sources of confounding and bias in safety studies; and (2) design a study for implementation and evaluation of pharmacy-based strategies to improve safety in ambulatory care settings. Method: To achieve the first goal, I have planned a workshop in collaboration with the FDA entitled Addressing Inadequate Information on Important Health Factors in Pharmacoepidemiology Studies Relying on Healthcare Databases. This workshop explores creative methods to address confounding and bias in pharmacoepidemiology safety studies. With respect to the second goal of this project, I will plan to assess the joint impact of a pharmacist-led intervention to patients and physicians, aimed at identifying and resolving drug therapy problems in high risk elderly patients on insulin and/or oral hypoglycemic agents. Ultimately, this study will provide an updated and contemporary medication safety framework for care in ambulatory settings, which practices can readily adopt and which future studies can use to devise and implement further actionable strategies to improve patient safety.

Empowering Site-Based Clinical Research by Junior Faculty through a Joint University and Multiprofessional Support and Research Team (Project JUMP START). Richard H. Drew, Campbell University and Duke University, D. Byron May, Campbell University. The increasing demand for site-based clinical research (SBCR) at Campbell University (CU) has widened the gap between faculty research expertise and available site-based resources. The void is most prominent among junior faculty who often lack the time and experience to conduct clinical research. Project JUMP START (Joint University and Multiprofessional Support and Research Team) is an ongoing pilot project that explores the feasibility of pairing a junior clinical pharmacy practitioner-educator with a research mentor and key research study personnel to enhance the ability of the junior faculty member to conduct research.

Generating Research Ideas: Experiencing Team Science in a College of Pharmacy. Silvia E. Rabionet, Nova Southeastern University. Background: In the context of team science it becomes imperative to provide spaces for the discussion of ideas with a transdisciplinary vision. Challenging scientists of different disciplines to address complex topics could be a good strategy to facilitate the generation of hypotheses, the formation of research teams, and the appreciation of the contribution of different disciplines in addressing the complexities of health-related issues. Methods: During a three-hour workshop, 60 faculty members of Nova Southeastern University College of Pharmacy gathered in six groups to discuss their potential research contribution in the topics of autism (two groups), medicinal marijuana (two groups), and HIV (two groups). Topics were selected for their growing importance in South Florida, previous work among faculty members, and their potential for a team science approach. Material about team science and about the topics was previously distributed. Guided by a facilitator, the groups were expected to elaborate transdisciplinary research questions, identify how they or the College could move the
Improving Cancer Trial Information to Increase Clinical Research Participation. Val R. Adams, University of Kentucky. The University of Kentucky Markey Cancer Center recently achieved NCI-designated cancer center status, which has increased the patient load and the number of clinical trials available. This designation has led to a busier, more challenging environment to enroll patients in clinical trials. Clinical investigators typically know available trials, including inclusion/exclusion criteria, for studies in which they are involved. However, their intimate knowledge about other trials and rapid access to such information is lacking. Many studies are low accruing, and the protocol review and monitoring committee (PRMC) closes them because completion is not feasible. The goal of this project is to increase the percentage of patients enrolled on clinical trials. Although there are a number of variables that influence recruitment of study participants, it is not feasible to optimize all of them simultaneously. However, one key component is the lack of widespread knowledge or easy access to study eligibility criteria. Therefore, the objectives of this proposal are to develop a searchable app that will have study inclusion/exclusion criteria that can quickly be used to determine if a patient is eligible for a clinical trial, and once the app is complete, to establish an associated educational process throughout the cancer center, in which published information and live educational services will be given to the clinical research associates, nurses, physicians, and pharmacists. The endpoints of this project include assessment of the changes in patient enrollment and utilization of the app. Utilization will be determined by the number of users downloading the app.

Success in Targeting and Achieving your Research Trajectory (START) Program for Clinical Faculty. Catherine A. St. Hill, University of Minnesota. We have identified a critical need for clinical faculty to gain skills to initiate their research agendas. We developed an interprofessional program to enhance the research resources of early- and mid-career clinical faculty with limited prior research training and experience. This program will also benefit late-career faculty who are changing their research direction. Our goal is to teach crucial competencies that are necessary to master prior to writing a grant application such as: evaluating a research question; the importance of networking and identifying an effective team of collaborators; building a strong research team; and understanding key components of well-written grants. Faculty will be recruited from within the University of Minnesota’s (UMN) Academic Health Center in a competitive selection process. The program’s goals will be accomplished through a series of monthly interactive 2-hour sessions over six months using a team-based learning approach. Each participant will meet regularly between sessions with departmental mentors and with in-session group mentors to facilitate the learning objectives. At the conclusion of the program, each participant will have developed the necessary expertise and plans to accomplish their short-term research goals. Clinical faculty with limited research experience will consequently be eligible to enter career development programs offered by the UMN Clinical and Translational Science Institute, such as the New Investigator Pre-K and KL2 Scholars programs among others. The long-term benefits of this program include the advancement of research and scholarly activities that enable academic promotion of clinical faculty and the highest quality of healthcare.


BIOLOGICAL SCIENCES


The Texas Screening Alliance for Cancer Therapeutics. Kevin N. Dalby, The University of Texas at Austin. Despite an increase in our knowledge of cancer biology, the rate at which anti-cancer drugs are reaching the clinic is declining, and many of the older anti-cancer drugs currently in clinical use function through non-specific mechanisms and are extremely toxic. With the growing appreciation of the underlying pathways driving different cancers, a new approach is to target specific pathways so that ultimately, we may arm clinicians with a specialized tool kit of compounds from which to create tailored cocktails formulated specifically for particular types of cancer presentation. Ideally, this approach would mean attacking the disease via multiple targets within a tumor. Cancer researchers have identified many of these targets, but they currently lack the knowledge base to develop and optimize target-specific drug therapies. Using more precisely defined biochemical mechanisms as our guides, we facilitate the development of therapeutic compounds that may be tested and eventually used to specifically attack particular types of cancerous cells, resulting in more effective and less toxic cancer therapeutics. Our long-term goal is to facilitate the introduction of new molecules to the clinic for the treatment of cancer. We proceed under the central hypothesis that by facilitating the biochemical screening of diverse or focused collections of compounds, new clinically relevant chemical entities can and will be identified. Our rationale is that with the steady decline in drug development in pharmaceutical companies, academic programs such as ours will become preeminent incubators for drug development and eventual introduction into commercial markets. Here we provide a strategic overview.

Transdisciplinary Neurovascular Sciences Network. Bjoern Bauer, University of Kentucky. Over 1.5 billion people worldwide suffer from brain disorders. While research has identified many drug targets to treat brain disorders, and discovery efforts have resulted in potentially effective drugs, the number of FDA-approved drugs for brain disorders remains small. This is, in part, due to the neurovasculature that contributes to brain disorders and impairs treatment by limiting brain drug delivery. Thus, the neurovasculature poses a major challenge. However, few researchers focus on the neurovascular sciences to overcome these challenges. The goal of this project is to establish a Transdisciplinary Neurovascular Sciences Network at the University of Kentucky. The rationale of this project is that connecting researchers and clinicians interested in neurovascular sciences will stimulate and foster transdisciplinary and translational research. Thus, a Transdisciplinary Neurovascular Sciences Network holds the promise of improved brain drug development, accelerated translation of findings into patients, as well as increased funding. We have assembled a group of three researchers and an administrative aide that meets once monthly. Small collaborative, transdisciplinary research projects have been identified (“Imaging Neurovascular Function in Epilepsy”), and three internal research proposals will be submitted. Once funded, preliminary data will be generated and research proposals will be submitted to external funding agencies. Future endeavors of the Transdisciplinary Neurovascular Sciences Network will focus on recruiting additional researchers, connecting with neuroscience groups and centers on campus, and outlining a map of future projects focused on the neurovasculature in brain disorders and extramural grant opportunities.
Enoyl-ACP Reductase II (FabK), a Selective Antibacterial Target for Clostridium difficile. Emily Price, Idaho State University, Kirk E. Hevener, Idaho State University, Julian Hurdle, Texas A&M Health Science Center, Dianqing Sun, University of Hawaii. Objectives: Hyperburelvent strains of Clostridium difficile greatly contribute to the overall morbidity and mortality of C. difficile infection (CDI), resulting in an estimated 14,000 deaths per year and a national burden in excess of $3 billion annually. There is an urgent need for the validation and characterization of novel antibacterial targets for the treatment of CDI. Accordingly, the objectives of these studies were to structurally and biochemically characterize the FabK enzyme from C. difficile as a novel therapeutic target. Method: The fabk gene from C. difficile (strain 630) was expressed using a standard prokaryotic system. A two-step purification involving Ni IMAC followed by gel filtration resulted in active protein at greater than 95% purity. A fluorescence-based biochemical assay following NADH consumption was optimized and used to kinetically characterize FabK, and to test the activity of known inhibitors of FabK from other species. In-house, experimental screens of three compound libraries containing over 2,000 compounds were performed. Finally, coarse screens to identify crystallization conditions were performed using purified protein and in-house crystallography screening kits. Results: Kinetic constants for the substrate, butenoyl-CoA, and co-factor, NADH, were determined to be 200μM and 25μM, respectively. Known inhibitors and preliminary hit compounds from experimental screening showed IC50 values in the low micromolar range. Crystallography screening studies are currently ongoing. Implications: The data from these studies have provided structural and mechanistic insight into the function and inhibition of FabK and may provide a framework for the discovery of novel therapeuetic candidates for CDI.

Examination of the Topoisomerase II Covalent Poisoning Mechanism of Etoposide Quinone. Elizabeth G. Gibson, Lipscomb University, McKenzie M. King, Lipscomb University, Melissa J. Sansom, Lipscomb University, W. Hayes McDonald, Vanderbilt University, Susan L. Mercer, Lipscomb University, Joseph E. Deweese, Lipscomb University. Objectives: Etoposide is an anticancer agent that targets topoisomerase II. Metabolism of etoposide produces several metabolites including etoposide quinone, which displays far higher activity than the parent compound. Our laboratory explores the mechanism by which the quinone metabolite impacts the activity of topoisomerase II. In particular, we are interested in whether the compound can impact DNA binding and DNA cleavage and whether the compound adducts to the protein covalently. Method: We utilized purified human topoisomerase IIα in biochemical assays to study the mechanism of etoposide quinone. We employed DNA cleavage assays, ATPase assays, fluorescence anisotropy, and electrophoretic mobility shift assays (EMSA). We utilized mass spectrometry to identify site(s) of adduction. Results: Our results indicate that etoposide quinone generates complexes with topoisomerase II that are as stable as those formed with etoposide but display a higher level of coordination. Further, we find that the quinone has no detectable impact on ATPase activity. Fluorescence anisotropy and EMSA show that etoposide quinone impacts DNA binding. Further, the quinone causes increased rates of DNA cleavage after a lag period, which may indicate redox cycling. Mass spectrometry of the drug:enzyme complex identified one possible site of adduction so far (C455). Implications: Etoposide quinone is a highly active and reactive metabolite of etoposide. Based upon these results and previous data, the quinone can function similar to etoposide by inhibiting ligation. However, our results indicate a second mechanism of action is also involved since the quinone impacts DNA binding and adducts to the enzyme.

Molecular Mechanisms of Drug-induced Liver Injury by Tyrosine Kinase Inhibitors. Klarissa D. Hardy, Lipscomb University, James A. Perkins, Lipscomb University, Rodney Vongkhamchanh, Lipscomb University, David S. Bourgeois, Lipscomb University. Objectives: Drug-induced liver injury associated with targeted anti-cancer agents is a growing clinical problem. Pazopanib and sunitinib are oral, multi-targeted receptor tyrosine kinase inhibitors used to treat various types of cancers; however, severe hepatotoxicity may limit their use in certain patients. The mechanisms of toxicity are unknown. The purpose of this study was to characterize the metabolism of pazopanib and sunitinib in vitro and determine if the metabolites formed are potential sources of drug toxicity. Method: Metabolic incubations were performed using human liver microsomal preparations or recombinant enzymes, and drug metabolites were identified by LC-MS/MS analysis. Glutathione (GSH) trapping studies were carried out in human liver microsomes to assess the formation of reactive metabolites. Results: The primary metabolites observed for pazopanib were hydroxyl-pazopanib, N-demethyl-pazopanib, deoxygenated-pazopanib, and glucuronide conjugates. The primary sunitinib metabolites were N-desethyl-sunitinib, hydroxyl-sunitinib, defluoronated sunitinib, and glucuronide conjugates. UDP-glucuronosyltransferase (UGT) 1A4 and 1A9 were identified as the major enzymes involved in glucuronidation of pazopanib and sunitinib, respectively. Moreover, GSH conjugates of sunitinib were detected by LC-MS/MS, and the structure was consistent with a reactive quinone imine intermediate. The conjugates were formed in an NADPH-dependent manner, suggesting cytochrome P450 (CYP)-mediated bioactivation. CYP1A2 was the major enzyme to generate the reactive metabolite-GSH conjugates. Implications: These findings provide direct evidence for the formation of reactive, potentially toxic metabolites from sunitinib and suggest that CYP1A may be involved in sunitinib bioactivation in vivo. Collectively, these data offer new insights into the potential role of drug metabolism in tyrosine kinase inhibitor-dependent hepatotoxicity.

The Role of Cathepsin K in Mediating Hippocampal Synaptic Plasticity and Memory. Travis E. Brown, University of Wyoming, Rebecca A. Darling, University of Wyoming, Paige M. Dingess, University of Wyoming. Objectives: The hippocampus plays a pivotal role...
in declarative memory formation, and recent studies have shown that cathepsin K, a cysteine peptidase known for its importance in osteoclast-mediated bone resorption, is expressed in high levels within the hippocampus. The objective of this study was to determine whether cathepsin K mediates synaptic plasticity within the hippocampus and is needed for hippocampal-dependent memory expression. **Methods:** Field recordings were performed from brain slices prepared from both rats and mice to assess the role cathepsin K plays in mediating changes in synaptic transmission and synaptic efficacy (long-term potentiation (LTP) and long-term depression (LTD)). In addition to electrophysiology, novel placement and novel object recognition tasks were performed on wild-type and cathepsin K knockout mice to determine whether cathepsin K is necessary for hippocampal-dependent memory tasks. **Results:** Inhibition of cathepsin K activity significantly reduced the maintenance of LTP (Control: Pre = 100 ± 0.5, Post = 148 ± 9; Cathepsin K inhibitor: Pre = 100 ± 0.9, Post = 118 ± 5; Odanacatib: Pre = 99 ± 0.1, Post = 108 ± 14) but had no significant effect on LTD or basal transmission. Slices prepared from cathepsin K knockout mice had a significant reduction in LTP maintenance (WT: Pre = 101 ± 0.5, Post = 147 ± 12; KO: Pre = 100 ± 0.8, Post = 104 ± 12). In addition, cathepsin K knockout mice displayed memory deficits with regards to novel object recognition. **Implications:** Our data suggests that cathepsin K may be a novel target for memory stability. With nearly one third of adults estimated to experience a gradual decline in cognitive function as they age, additional research is needed to better understand the basic physiological mechanisms of memory formation to develop new therapeutic treatments.

**CHEMISTRY**

**Development of NO Mimetic Furoxans as Novel Agents for Alzheimer’s Disease Therapy.** Adam Novak, University of Toledo, Aparna Raghavan, University of Toledo, Zahoor Shah, University of Toledo, Isaac T. Schiefer, University of Toledo. **Objectives:** Nitric oxide (NO) mimetic nitrates have demonstrated potential as novel therapeutics for neurodegenerative disorders. Development of nitrates for neurodegeneration has faced challenges due to fast metabolism and rapid-onset of NO mimetic effects. We pioneered the conception of furoxans as potential slow-onset NO mimetic neuroprotective and proognitive agents. Furoxans exhibit ‘tunable’ NO mimetic activity and have demonstrated utility in multiple in vitro neurodegeneration models. This study represents the proof-of-concept in vivo examination of furoxans in the CNS. **Method:** A focused library of novel furoxans was synthesized. Analogs were screened for activity in a cellular neurodegeneration model. One analog was selected for in vivo evaluation at 1, 10, or 20 mg/kg (i.p.) using a murine memory model called step-through passive avoidance (STPA). Mice may be trained against instinctive behavior using aversive stimuli. STPA assesses the ability of drugs to reverse hippocampal-dependent aversive memory deficits induced by scopolamine, a muscarinic antagonist and amnesic agent. The furoxan was administered 1 or 2 hr prior to training and scopolamine administered 30 min before training. Memory retention was measured 24 hr after training. **Results:** Furoxans demonstrated in vitro neuroprotection and one furoxan, IS-1-41, emerged for in vivo evaluation. IS-1-41 (20 mg/kg) provided significant reversal of scopolamine induced cognition deficits when administered 2 hr prior to training. No activity was observed when administered 1 hr before training, suggesting slow-onset furoxan efficacy. **Implications:** This data supports our hypothesis that an attenuated furoxan can possess the beneficial neuromodulatory effects observed for nitrates whilst possessing superior metabolic stability.

**Engineering Natural Functional Groups from Leucine into “Stapling” Amino Acids.** Terry W. Moore, University of Illinois at Chicago. Thomas E. Speltz, University of Illinois at Chicago. **Objectives:** One well developed approach for constraining peptides into alpha-helical conformations is to chemically install an all-hydrocarbon “staple” via ring closing metathesis of two non-natural alkene-containing amino acids. When incorporating a chemical staple, the introduced alkyl chain — meant to be just a constraint — can itself interact with hydrophobic regions on the target protein’s surface and augment the affinity and selectivity characteristics of the amino acid residues from the natural sequence. For example, in a crystal structure of a stapled peptide derived from steroid receptor coactivator 3 (SRC3) that binds to the estrogen receptor, the hydrocarbon staple interacts with the receptor in place of isoleucine and leucine residues. We hypothesized that enhanced selectivity and potency could be achieved by better reproducing the natural binding surface of SRC3. **Method:** Asymmetric syntheses using Evans’ N-acyloxazolidinones and Schöllkopf’s bis-lactim methyl ether were used to prepare leucine and isoleucine analogs integrating stapling functionality. These analogs were incorporated into peptide sequences from the steroid receptor coactivators using solid-phase peptide chemistry. Time-resolved fluorescence resonance energy transfer experiments were used to determine the extent of competitive inhibition of the estrogen receptor/coactivator interaction. **Results:** With a few exceptions, leucine-mimicking stapling amino acids were incorporated into peptide sequences from the steroid receptor coactivator. Stapled peptides inhibited the interaction of the estrogen receptor with a coactivator fragment. **Implications:** These new stapling amino acids may be used to inhibit interaction of the estrogen receptor/coactivator or of other protein-protein interactions.

**Synthesis and Evaluation of Novel Enaminoic Compounds as Potential Agents for Partial Epilepsy.** Patrice Jackson-Ayotunde, University of Maryland Eastern Shore, Winfield Whittington, University of Maryland Eastern Shore, Tiffany Taylor, University of Maryland Eastern Shore, Mohamed Sackor, University of Maryland Eastern Shore, Nnaemeka Emenari, University of Maryland Eastern Shore. **Objectives:** Epilepsy is a chronic and often a progressive neurological disorder that is characterized by brief spontaneous recurrent seizures. There is an unmet medical need for new drugs to effectively treat therapy-resistant partial epilepsy to allow for patients to become seizure-free. The objective of this study was to design and synthesize a novel class of enaminoic compounds for evaluation as potential antiseizure agents for treatment of partial epilepsy. **Method:** Structure-activity relationship studies led to the synthesis of twelve novel enaminoic analogs via base-catalyzed condensation reactions. All compounds were characterized by nuclear magnetic resonance and elemental analysis. Enaminoic compounds underwent pre-clinical screenings in mice seizure models at the National Institute of Neurological Disorders and Stroke, NIH Anticonvulsant Screening Program to evaluate the analogs’ effectiveness at preventing electrical-induced seizures. Each analog was tested at different time intervals (0.25h to 8h) and at different doses ranging from 30 – 300 mg/kg. Test compounds were administered via intraperitoneal (IP) injections. **Results:** Active antiseizure analogs showed moderate to good protection in the mice qualitative maximal electroshock test and the pharmacoresistance 6 Hz ‘psychomotor’ partial seizure test, with minimal signs of neurotoxicity. The four lead 6 Hz active compounds protected 25-100% of animals from induced seizures with doses ranging from 30 mg/kg to 100 mg/kg. **Implications:** The current data for the promising 6 Hz active enaminoic analogs have proven that these compounds can cross into the brain and protect rodents from electrical-induced partial seizures with limited to no neurotoxicity.
PHARMACEUTICS

Quantitative Mechanistic Modeling of Drug Disposition with Variable Interactions. Sean H. J. Kim, University of Pittsburgh. Objectives: Inappropriate pharmacokinetics with various interactions has been cited as a major culprit for drug development failure. New scientific and rational approaches are needed for improving our understanding of the underlying mechanisms to help avoid costly failures and improve overall drug safety. The objective of this study was to develop and explore a new quantitative and systems pharmacology approach for deciphering the interplay of drug disposition and pharmacological interactions. Method: An individualizable, virtual patient model was constructed using an object- and agent-oriented, discrete event modeling and simulation approach. The virtual human model was refined iteratively to create increasingly detailed simulation of subject-specific drug disposition. Validation focused on simulating retrospective data from a randomized crossover study of six healthy volunteers who were administered extended-release felodipine tablets with (and without) concomitant food intake. Similarity criteria were defined to quantitatively determine the similarity between simulated and referent plasma concentration profiles. Results: The virtual human model underwent several cycles of mechanism revision to achieve validation for all six pairs of referent profiles. Subject-specific simulations enabled each executed virtual human’s plasma felodipine-time profiles to quantitatively mimic features of corresponding individual subject plasma drug profiles with food interaction. Implications: Subject-specific differences in mechanistic detail and event differences during execution bring into focus new hypotheses for experimentation that can generate the evidence to identify causes of pharmacological interaction. The new methods provide much-needed means to begin unraveling mechanisms underlying complex pharmacological phenomena and facilitate new strategies to mitigate pharmacokinetic and drug safety liabilities.

Thermosensitive Hybrid Hydrogel for Delivery of Anti-Cariogenic Agents. Feng Li, Hampton University. Liang Hong, University of Tennessee Health Science Center. Objectives: Dental caries is a chronic disease that has the highest incidence in children. The use of fluoride in children may cause fluorosis. Therefore, an effective non-fluoride caries prevention formulation is needed. An anti-caries formulation that targets multiple etiological factors of dental caries is preferred to effectively reduce the incidence of caries. The objective of this study was to develop a multimodal caries prevention formulation that can simultaneously inhibit cariogenic bacteria and promote remineralization. Method: We designed a hybrid hydrogel formulation that contains an amorphous calcium phosphate (ACP), Chitosan (CS), and Pluronic F127. ACP can promote the remineralization. CS can inhibit cariogenic bacteria and prevent biofilm formation. Pluronic F127 hydrogel can be used for tooth surface topical delivery of ACP and CS. The formulation was optimized and characterized by testing the Ca\(^2+\) release and PO_4\(^{3-}\) release. The morphology of hydrogel was observed with a scanning electron microscope (SEM). Results: An in situ ACP formation method was employed wherein the final hydrogel formulation was prepared by mixing two pre-made hydrogels immediately prior to use. The hydrogel formulation was characterized by sustained release of Ca\(^2+\) and PO_4\(^{3-}\) for 7 hours. SEM results showed the final product has a typical microscopic structure of hydrogel with ACP precipitations dispersed in hydrogel matrix. Implications: The developed hydrogel formulation has great potential to be used as a safe and effective anticaries agent for children. It will facilitate the paradigm shift of caries management from surgical/restorative model to medical/preventive model.

PHARMACY PRACTICE

Assessment of 23-Valent Pneumococcal Vaccine Response in Critically-Ill Burn Patients. Scott W. Mueller, University of Colorado, Laura J. Baumgartner, Touro University, Gordon Lindberg, University of Colorado, Arek Viktor, University of Colorado, Rob MacLaren, University of Colorado, Tyree H. Kiser, University of Colorado, Douglas N. Fish, University of Colorado, Edward N. Janoff, University of Colorado. Objectives: Administration of the pneumococcal polysaccharide 23-valent vaccine (PPSV23) to qualified patients prior to hospital discharge is a standard of care. This study aims to assess immunogenicity and safety of PPSV23 in critically-ill burn patients when given within the first 6 days of admission. Further, we aim to assess immune status by response to the PPSV23. Method: Informed written consent was obtained prior to PPSV23 administration. Blood was collected prior to and 14-35 days post PPSV23 administration. IgG titers to 14 pneumococcal serotypes were analyzed using a quantitative multiplex bead assay. A protective response and a relative immune response were defined as an absolute post PPSV23 titer level of >1.3 mcg/mL and a 4-fold increase in titer from baseline, respectively. Results: Of 20 patients enrolled, 16 finished the study. The median age was 42.5 years, percent (%) surface area burned 20%, and CRP 16.75 mg/dL (normal <1). Three, 15 and 16 patients had a protective response to all 14, 10 and 8 serotypes, respectively. A protective response occurred to a median 12.5 of 14 serotypes. One, 11 and 14 patients had a relative immune response to all 14, 10 and 8 serotypes, respectively. A relative response occurred to a median 11.5 of 14 serotypes. There were no adverse events attributed to PPSV23 administration. Implications: Critically-ill burn patients exhibited a response to the PPSV23. This population mounted a titer response to an antigen challenge despite belief they are immune-depressed. Titer functionality and durability remains unknown. PPSV23 appears safe in this population.

HIV Associated Neurocognitive Disorders in Patients on Integrase Inhibitors. Jessica L. Adams, Philadelphia College of Pharmacy, Yooyung Choi, Philadelphia College of Pharmacy, Victoria Brent, Cooper University Hospital, John Baxter, Cooper University Hospital. Objectives: HIV Associated Neurocognitive Disorders (HAND) result from ongoing HIV replication in the central nervous system (CNS). Antiretrovirals decrease viral replication but differ in their CNS penetration. Integrase inhibitors are the newest antiretrovirals with limited clinical data on their effect on neurocognitive function in HIV patients. This study is designed to compare the protective effects of dolutegravir and elvitegravir against HAND. Method: Patients starting on dolutegravir or elvitegravir regimens were given neurocognitive assessments prior to initiation and after 6 months on therapy. The Montreal Cognitive Assessment (MoCA) was utilized to evaluate patients’ visuospatial/executive function, naming, attention, language, abstraction, delayed recall, and orientation. Results: To date, 20 patients have been enrolled with a median baseline MoCA score of 25/30 points. Fifty five percent are male and 60% African American with a median age of 46.5 years. There is no difference in baseline characteristics or baseline MoCA scores between patients started on dolutegravir and elvitegravir. Patients with sleep-aid medications had median MoCA scores 2.5 points higher at baseline than those without (p = 0.035), and there were lower language scores by one point in patients with documented pain disorders compared to those without (p = 0.012). Five patients have completed the second assessment with a median score of 27/30, and all five scored 1-3 points higher on the second assessment. Implication: More second assessments are needed to compare the changes in MoCA scores in patients started on dolutegravir versus elvitegravir. Patient-specific factors...

Impact of Using Team-Based Learning in Patient Education on Diabetes Outcomes. Tracy R. Frame, Belmont University, Juanita A. Drainie, Cedarville University, Thaddeus T. Franz, Cedarville University. Objectives: To examine differences in clinical and other outcomes in Type 2 diabetic patients who received education utilizing either traditional didactic-based or team-based learning (TBL) teaching methods. Method: This study utilized a randomized, pretest-posttest control group design. Patients were randomly assigned to the control (lecture-based) or intervention (TBL) group. Each group attended four classes over a 12 week period. Patient outcomes measured included clinical (fasting blood glucose, Hemoglobin A1c, weight and blood pressure) and other assessments (knowledge, self-management behaviors and quality of life (QOL)) at baseline (prior to classes), 3 months (at completion of classes) and 6 months. Within group and between group changes were assessed. Results: A total of 57 patients (n = 27 control, n = 30 intervention) were enrolled. There were no significant differences between groups for clinical markers or other assessments. There were no significant changes in clinical markers over time in the control group, but the intervention group showed significant decreases in weight (p = 0.036), systolic blood pressure (p < 0.001) and diastolic blood pressure (p = 0.007). There were significant increases in other outcomes over the study period in the control group (self-efficacy (p = 0.045), overall QOL (p < 0.001)) and TBL group (self-efficacy (p = 0.032), diabetes knowledge (p = 0.004)). Implications: While there were no significant differences seen between groups, there were clear benefits within the intervention group in regard to clinical markers and diabetes knowledge. While traditional education is beneficial for patients, TBL provides patients with an opportunity to apply information they are learning in a new way and could be considered when providing patient health education.

NPH Insulin for Prednisone-Induced Hyperglycemia. Andrew S. Bzowyckyj, University of Missouri – Kansas City, Cameron C. Lindsey, University of Missouri – Kansas City, Lamont G. Weide, University of Missouri – Kansas City. Objectives: This proof-of-concept study investigated the safety and efficacy of neutral protamine Hagedorn (NPH) insulin for prednisone-induced hyperglycemia in patients with established Type 2 diabetes (T2DM). Method: In this single-group quasi-experimental study of patients with T2DM newly initiated on 20+ mg of prednisone/day for at least seven days, subjects had a continuous glucose monitoring (CGM) sensor placed within 24 hours of starting prednisone and were instructed to continue their routine diabetes medication(s) for three days. On day 4, NPH insulin was added to the subjects’ regimen and dosed according to the study protocol. The CGM sensor was removed after 7 days. Each individual’s mean amplitude of glycemic excursion (MAGE) while on the NPH insulin (intervention) was compared to his/her own baseline readings (control) using paired samples t-tests. Secondary outcomes included difference in average daily gluoses and hypoglycemic events. Results: Four patients enrolled in the study, but only three subjects submitted a complete data set. One subject showed a statistically significant difference in favor of the control group (-19.75 +/- 19.48 vs. 25.38 +/- 40.3; p = 0.030) whereas the other two subjects showed no difference. No significant differences in average daily glucose between study arms was seen for any of the subjects. No hypoglycemia was seen in either arm through both glycose monitoring and sensor data. Implications: Low enrollment numbers and each subject’s extenuating circumstances resulted in no demonstrable improvement in glycemic control. Further investigation is warranted; however, the acuity of these subjects’ conditions makes it a difficult population for rigorous study.

SOCIAL AND ADMINISTRATIVE SCIENCES

Development of a Community Pharmacy Social Capital Assessment Tool. Oscar W. Garza, University of Minnesota. Objective: To develop a method for examining the relationship between social capital and community pharmacy. Method: A community pharmacy social capital assessment instrument was developed and adapted contextually for community pharmacy practice. The instrument was pretested with pharmacy practitioners to ensure contextual relevance. Community pharmacists were identified from a roster of licensed and employed pharmacists provided by the state board of pharmacy, and 1,200 were randomly selected and invited to respond to the 74-item instrument. A quasi-experimental approach was used to randomly stratify the sample into 3 groups: (1) randomly selected not to receive an incentive, (2) randomly selected to receive an incentive with the invitation to participate (i.e. prior to participation), and (3) randomly selected to receive an incentive after participation in the study. Descriptive statistics were calculated for each group. Results: Each of the primary three research arms: (1) Zero incentives (n = 38); (2) Pre-participation incentives (n = 193); and (3) Post-participation incentives (n = 83) were analyzed. On average, 50.11% of pharmacists did not feel confident in their ability to address the unmet needs of their patients, and about 45.75% of pharmacists did not believe they were well-informed about the resources available to address their patients’ unmet social needs and reported low levels of structural social capital. Implications: Improving our understanding of social capital and how community pharmacists structure, organize and utilize relationships within the communities they serve will provide important insight into how community pharmacy practice can address the unmet medical and social needs of their respective communities.

Effectiveness of Different Financial Incentives to Improve Medication Adherence, Kimberly B. Garza, Auburn University, Justin K. Owensby, Auburn University, Kimberly Braxton Lloyd, Auburn University, Elizabeth A. Wood, Auburn University, Richard A. Hansen, Auburn University. Objectives: Medication nonadherence significantly impacts healthcare costs, morbidity and mortality. This study aims to determine the relative effectiveness of financial incentive structures to improve medication adherence. Method: This randomized, controlled trial comparing the effects of financial incentives vs. usual care on medication adherence utilized patients taking antihypertensive or dyslipidemic medications. Participants were randomized to receive usual care (UC), guaranteed pay-out (GPO) incentives, or lottery incentives. Daily adherence was measured for 90 days using MEMS caps (30-day lead-in, followed by 60-day incentive period). The GPO group received $30 up-front in a virtual account, which was charged $0.50 for each dose missed. Participants in the lottery group were entered into a weekly drawing for a chance to win $50, payable if they took all prescribed doses that week. Incentive groups received a weekly report of progress. Statistical analysis included descriptive statistics and ANOVA. Results: A total of 36 participants were randomized (n = 11 UC, n = 14 GPO, n = 11 lottery.) The majority were female (61%) and had total household income of $20,000-$60,000 (53%). Mean age was 50 ± 10.6 years. For the incentive period, mean percent days adherent was highest in the lottery group (96.4 ± 3.9%) followed by GPO (93.8 ± 8.5%) and UC (93.8 ± 8.5%). There were no significant differences among groups (p > 0.05), and no significant changes in adherence from lead-in to incentive period for any group (p > 0.05). Implications: Although no statistically significant differences in adherence were demonstrated in this small sample of highly adherent participants, larger studies in a more diverse population or with other medications might show otherwise.
Outcomes of Treatment for Clostridium difficile Infection Among Pediatric Patients. Vanessa W. Stevens, University of Utah, Elyse M. Schwab, University of Utah, Jacob Wilkes, Intermountain Healthcare, E. Kent Korgenski, Intermountain Healthcare, Judy Daly, Intermountain Healthcare, Adam L. Hersh, University of Utah, Andrew T. Pavia, University of Utah. Objectives: To describe the clinical characteristics of pediatric inpatients with Clostridium difficile Infection (CDI) and to evaluate treatment patterns and outcomes in this group of patients. Method: Retrospective cohort study of inpatients with CDI at an academic children’s hospital from 2003 to 2010. Poisson regression was used to evaluate trends in rates over time. Descriptive statistics were used to characterize clinical characteristics of patients. Results: From 2003 to 2010, there were 1,143 unique incident episodes of CDI from patients with a hospitalization. Nearly 38% of episodes were among infants aged less than 1 year old. Approximately 80% of patients received a metronidazole-containing regimen for CDI, 15% were not initially treated with an anti-CDI drug, and only 5% received a vancomycin-containing regimen as initial therapy. A slightly higher proportion of severe episodes were treated with metronidazole alone compared to all incident episodes (61.1% vs. 53.4%, respectively). One quarter of patients that developed a recurrence did not have medication data available. Of the patients with medication data, 50% (59 of 119) received only metronidazole, suggesting similar treatment patterns for recurrent infections. There was no difference in treatment patterns for children under 1 year of age. Implications: Our results suggest a significant degree of treatment of CDI among infants less than 1 year old. Episode severity, as measured by modified Zar criteria, did not appear to influence treatment choices. Going forward, development of a validated definition of severe CDI in children will clarify existing treatment guidelines and ultimately improve outcomes.

2014-2015 INNOVATIONS IN TEACHING
HONORABLE MENTION

Behind the Numbers of a Preceptor Mini-Series: A Proven Approach to Preceptor Development. Craig D. Cox, Texas Tech University Health Sciences Center, Brittany Patterson, Texas Tech University Health Sciences Center, Jonggil Cheon, Texas Tech University - College of Education, Steven Crooks, Idaho State University, Jae Hoon Lee, Texas Tech University, Jacob Curtis, Texas Tech University. Objectives: Facilitate an innovative, interactive, and entertaining approach to education and training for preceptors, and perform quality assurance measures to determine its effectiveness. Method: Chronicated by two preceptor experts, the Mini-Series follows the challenges of two students and their preceptor through a six-week experiential rotation. Available online, the series consists of 12 short video episodes, each accredited for 15 minutes of CPE. Participants complete three reflective questions and evaluation per episode. Three months following series completion, a survey was distributed to analyze long-term impacts on precepting skills. Results: 202 individuals completed all 12 Mini-Series video episodes; the majority were adjunct preceptors (n = 131, 66.3%) and had one to five years of preceptor experience (n = 63, 31.2%). After completing each episode, the participants’ mean confidence level was significantly greater than prior to completion (t = -17.299, p < .001). This increase is significant regardless of the type of preceptor or years of experience. Three months following completion of all 12 episodes, 32% of participants reported a mean of 6.84 (10 – Big Increase, 1 – No Increase) in precepting comfort level as a result of the Series. 99% of participants stated they would complete a similar training program and recommend it to others. Implications: After series completion, respondents in this quality assurance project overwhelmingly indicated an increase in comfort level for precepting. In its infancy, the Mini-Series yielded healthy demand, strong completion numbers, and positive feedback indicating this program and delivery format are well received and effective for future education and training initiatives.

The Emerging Microbe Project: Synthesis of microbial identification and clinical case studies in an infectious disease Course. Lauren A. O’Donnell, Duquesne University, Michael W. Perry, Duquesne University. For many doctor of Pharmacy (PharmD) students, basic sciences and clinical pharmacy often appear detached from each other. In the infectious disease field, PharmD students additionally struggle with mastering the diversity of microorganisms and the corresponding variety of therapies. The objective of this study was to design an interdisciplinary project that would integrate fundamental microbiology with clinical research and decision-making skills. The Emerging Microbe Project guided the students through patient cases from the first stages of pathogen identification to defending a therapeutic strategy for an infected patient. We hypothesized that the students would develop a better understanding of how basic microbiology fit into clinical practice and that they would gain confidence and skill in independently selecting appropriate anti-microbial therapies for a new disease state. Unknown microorganisms and the associated disease states were selected based upon microorganisms that were significant global health issues outside of the United States (e.g. cholera) or were newly emerging microbes with little previous clinical data (e.g. Dengue virus). Thus, students were tasked with investigating disease states that were outside of their typical clinical experiences or geographic locale. Here, we demonstrate that the Emerging Microbe Project significantly improved student learning through multiple assessment strategies and increased student confidence in their clinical infectious disease skills.