MEETING ABSTRACTS

113th Annual Meeting of the American Association of Colleges of Pharmacy, Kissimmee, FL, July 14-18, 2012

BIOLOGICAL SCIENCES

Completed Research

A Team-based “Enzyme Workshop” for Teaching Enzyme Function and Pharmacologic Targeting to First-year Pharmacy Students. Joseph E. Deweese, Lipscomb University. Objectives: This study was focused on presenting information related to function and pharmacologic targeting of enzymes to first year student pharmacists. Previously, content delivery focused primarily on didactic lectures with little student interaction. The current study examined presenting this information in a workshop format using team-based learning.

Method: Seventy-six first year student pharmacists taking a course titled Biomolecular Chemistry were divided into twelve groups of 6-7 students. Each group was assigned a different enzyme with pharmacologic relevance. Groups were given a series of questions related to the enzyme and were given 45 minutes to work as a team using textbook and internet resources to answer the questions and assemble the answers into a PowerPoint format. Students were also given an individual pre-workshop and post-workshop assessment.

Results: At the end of the period, groups were given an opportunity to report some of their findings. Each group submitted a short PowerPoint file with answers to the assigned questions, which was provided to the class via Blackboard. The pre- and post-workshop assessments indicate that over 96% of the students responded that knowledge related to enzymes improved and over 64% responded that the session should be repeated for future classes. Students also provided suggestions for improvement of the session. Implications: The team-based learning approach was well-received by students and provided a broader knowledge-base of enzymes than had been possible using a lecture-only approach. This method will be revised for future application including adding a second hour to allow time for assignment completion and student presentations.

Acetaminophen Reduces Lipid Accumulation and Improves Cardiac Function in the Obese Zucker Rat. Miaoazong Wu, Marshall University, Ravikumar Arvapalli, Cuiyen Wang, Satyanarayana Paturi, Nandini Manne, Lucy Dornoen, Paulette Wehner, Eric Blough, Marshall University School of Pharmacy. Objectives: Obesity and excess lipid accumulation are thought to play a critical role in the development of heart disease which is the leading cause of death in the U.S. The objective of study was to determine if chronic acetaminophen treatment can attenuate obesity-induced cardiac dysfunction.

Method: Male obese Zucker rats (N=6) aged 4 weeks were administered 30 mg acetaminophen/kg body weight/day via drinking water for 26 weeks. Age matched obese and lean Zucker rats were used as controls. Echocardiography was performed at 27 weeks of age to evaluate cardiac function. Heart and blood were collected from anesthetized rats at 27 weeks of age to evaluate cardiac function.

Results: Compared to that observed in the untreated obese and lean control animals, chronic acetaminophen administration at 30 mg/kg/day did not alter blood alanine aminotransferase and alkaline phosphatase levels. Untreated obese control rats exhibited evidence of tricuspid regurgitation (TR) and aortic insufficiency (AI) when compared to lean animals, while acetaminophen treatment significantly reduced the incidence of TR and AI. Blood biochemical analysis suggested a significant decrease of circulating triglyceride levels in acetaminophen-treated rats. Histological analysis following Oil Red O dye staining revealed a significant reduction in cardiac triglyceride and lipid accumulation in the obese Zucker rats treated with acetaminophen. Implications: These results suggest that chronic but low level of acetaminophen treatment at ~50% of the recommended human dosage in the obese Zucker rat is associated with decreased circulating triglycerides, diminished cardiac tissue lipid accumulation and improved cardiac function.

Aliphatic Alcohols Induce Hepato- and Nephrotoxicity Primarily via Lipid Peroxidation and Genomic Instability in Vivo. Vivek Lawana, Amii Patel, Michael DeBisschop, Manchester College School of Pharmacy, Robert D. Beckett, Manchester College School of Pharmacy, Sidhartha D. Ray, Manchester College School of Pharmacy. Objectives: Determine whether exposure to single hepato- and nephrotoxic doses of methanol (M), ethanol (E), isopropanol (IS) and t-butanol (Bu) induce: lipid peroxidation (malondiadehyde accumulation), genomic instability (DNA fragmentation), and various forms of cell deaths in the liver and kidneys in vivo.

Method: A LD40 (25% aqueous solution) of these alcohols were orally administered to five groups of three month old ICR mice (Control, M, E, IS, Bu), and all the animals were sacrificed 24 hours later. Blood was collected for serum chemistry and tissues for biochemical analysis. Results: Serum chemistry revealed clinically significant nephrotoxicity (blood urea nitrogen [mg/dL]: Con 21±2; M 32±3; E 27±2; IS 44±4; Bu 97±8), and modest hepatotoxicity (alanine aminotransferase activity [IU/L]: Con 33±4; M 58±3; E 59±3; Bu 127±6). Lipid peroxidation (nM MDA/g Liver) in the liver (Con- 100%; M- 172%; E- 133%; IS- 158%; Bu- 205%) and kidneys (Con- 100%; M- 148%; E- 152%; IS- 155%; Bu- 202%) escalated with increased number of carbon atoms. Consistent with the above findings, IS and Bu showed dramatic increases in DNA fragmentation (μg Fragmented/Total DNA) both in the liver (Con- 100%; M- 395%; E- 431%; IS- 566%; Bu- 288%) and kidneys (Con- 100%; M- 395%; E- 431%; IS- 566%; Bu- 288%). Overall, cell death kinetics mirrored the biochemical findings. Implications: Liver and kidneys undergo oxidative stress under the influence of these alcohols, propelling genomic instability and ultimately resulting in cell death. With greater the numbers of carbon atoms, toxic impact on vital organs tended to increase.

An Integrated Biomedical and Pharmaceutical Science Course Delivered by Team-Based Learning to First-Year Pharmacy Students. Stephen W. Luckey, Regis University; Peter Clapp, Regis University; Matthew G. Fete, Regis University, S. Dean Allison, Regis University, Leah Sheridan, Regis University, Peter Cogan, Regis University, Michael H. Nelson, Regis University. Objectives: The objective was to deliver and evaluate an innovative integrated biomedical and pharmaceutical science course using Team-Based Learning (TBL). This is the first in a series of pharmacotherapy courses that serves as the foundation for understanding the scientific basis of drug therapy.

Method: A series of units were developed covering biochemical, physiologic, pharmacologic, pharmacokinetic, pharmaceutical, and medicinal chemistry principles. The 8-week course was delivered in a TBL format in the fall semester of the P1 year. Topics included: drug discovery and classification, drug development and regulation;
Acid-base, pH, ionization, and partitioning; biochemical concepts; drug receptors: biochemistry and pharmacology; pharmacodynamics; structure activity relationships; drug formulation, delivery, and absorption; drug distribution, metabolism, and excretion; and one-compartment model and dosing concepts. End of semester course evaluation were completed by the students. Results: Students rated this course high on course evaluations and found it to be intellectually challenging and stimulating. The tRAT and application exercise discussions were valuable to their learning. Students indicated the integration of the biomedical and pharmaceutical sciences into TBL units helped them learn the material. Lastly, students agreed that the TBL units were structured to efficiently use class time and little redundancy in course content occurred. Implications: These results indicate that this innovative integrated biomedical and pharmaceutical science course using peer-to-peer instruction constitutes a promising education model that provides students with a valuable and effective learning experience. This course fosters the understanding of the foundational scientific principles of pharmacotherapy essential for a pharmacy practitioner.

Assessment of a Patient-Centered Lecture Given Simultaneously by Pharmaceutical Science and Clinical Faculty. Joie Rowles, Midwestern University-Glendale, Lindsay E. Davis, Midwestern University-Glendale, Mark Olsen, Midwestern University-Glendale. Objectives: To develop and assess a patient-centered lecture given simultaneously by multidisciplinary pharmacy faculty utilizing their area of expertise. Method: Three college of pharmacy faculty including a pharmacologist (JR), a medicinal chemist (MO), and a pharmacist (LD) met to develop a joint lecture for a required Integrated Sequence cardiovascular topic. The lecture topic, content, goals and learning objectives were a result of the collaboration. The lecture was patient-focused with the central goal of demonstrating the relevance and utility of pharmacology and medicinal chemistry in the practice of pharmacy. Student feedback was voluntarily solicited via TurningPoint questions. The faculty met afterward to review student responses and discuss. Results: A 50 minute PowerPoint presentation on atrial fibrillation was simultaneously given to PS2 students. LD introduced the patient case, JR provided relevant pathophysiology and pharmacology, MO discussed pertinent drug structure and functional groups, and LD concluded by incorporating all previous information into the management of the case. The student feedback indicated greater than 80% agreement on statements concerning improved learning (response rate 71%). Faculty assessment was favorable with plans to continue joint lectures in the future. Implications: It is possible to successfully present a lecture given simultaneously by multidisciplinary faculty. Most students indicated that it was helpful to their learning. This process requires a higher level of faculty collaboration and time commitment than individual lectures. Joint lectures have the potential to enhance student learning by assisting students in making connections across disciplines. Joint lectures also provide opportunities for meaningful integration of pharmacy departments.

Components of Grapes and Red Wine Can Act as Direct Antithrombotic Inhibitors. Christine N. Galinski, Western New England University, Daniel R. Kennedy, Western New England University. Objectives: Flavonals such as quercetin compose about 0.1% of the weight of freeze-dried grapes and are thought to have some cardioprotective effects through non-specific mechanisms that interrupt platelet function and signaling. We recently identified a subset of quercetin analogs, those that contain a 3-O-glycosidic linkage, as having direct antithrombotic activities through a mechanism that inhibits the catalytic activity of protein disulfide isomerase (PDI), an initiating step in thrombus formation. In this study, our objective was to determine if freeze-dried grapes contained enough of these compounds to inhibit the catalytic activity of PDI. Method: Freeze-dried grapes, broccoli, and mango were rehydrated at 10 mg/100 ul. PDI activity was assayed by measuring the catalyzed reduction of insulin, as the turbidity of aggregated insulin chains can be measured by absorption at 650 nm. The reconstituted food was added to a reaction mixture of PDI, insulin, DTT and EDTA in 100 mM potassium phosphate at pH 7.4. It was run at 37°C for 45 minutes. Results: Freeze-dried grapes contained sufficient amounts of 3-O-glycosidic quercetin derivatives to inhibit PDI in a concentration dependent manner. Interestingly, broccolli, which contains higher amounts of quercetin than grapes do, was negative in our assay, suggesting it does not contain many 3-O-glycosidic quercetin derivatives. Mango was also negative. Implications: The cardioprotective effects of grapes and red-wine may also utilize direct antithrombotic mechanisms in addition to the non-specific mechanisms that interrupt platelet function and signaling.

Course Level Curriculum Map Pilot Program. Jane M. Souza, St. John Fisher College, Amy L. Parkhill, St. John Fisher College, Jennifer L. Mathews, St. John Fisher College. Objectives: To pilot a newly developed course level curriculum map that documents course learning outcomes, corresponding teaching activities, assessments, student achievement on assessments, and evidence-based changes made subsequently at the course level. Method: The newly developed course level curriculum map was piloted in twelve courses involving nine faculty members. Faculty either retroactively recorded data or utilized the map during the semester. At the conclusion of the pilot period, a focus group was conducted during which seven of the faculty members shared experiences and recommendations. Focus group comments were recorded by three people. Recorders’ notes were compared for accuracy and completeness. Notes were analyzed using ATLAS.ti, a qualitative research program. Results: Qualitative analysis of focus group notes yielded four principal comment codes: learning outcomes, changing activities, documenting changes, and changing assessments. These four main codes document that faculty believe work is needed on writing better course learning outcomes, creating more appropriately matched course activities, better documenting data-driven changes that occur at the course level, and developing appropriate assessments. Implications: Faculty comments support school-wide adoption of course level curriculum mapping. They also suggest a need to provide faculty development on writing precise learning outcomes and mapping them to specific classroom activities to support outcomes achievement. Additionally, curricular changes made at the course level need to be carefully documented and linked to appropriate evidence derived from assessments. The value of the map for inclusion in the dossier for promotion and tenure was also noted.

Current Status of Pharmacogenomics Education Among Practicing Pharmacists. Jaehwa Choi, Southwestern Oklahoma State University, Robyn Dowdy, Southwestern Oklahoma State University, Nina C. Morris, Southwestern Oklahoma State University, Christine F. Cox, Southwestern Oklahoma State University, John C. Kermode, Philadelphia College of Osteopathic Medicine. Objectives: Great emphasis is placed on pharmacogenomics to achieve personalized medicine in the post-genomic era. The goal of the current study was to assess practicing pharmacists’ educational background and perceived knowledge base of pharmacogenomics. Method: An online survey was sent to active pharmacist preceptors (n > 600) on the SWOSU COP Experiential Database. Data were collected in Excel format and further analyzed using SigmaPlot. Results: Demographics of the survey respondents showed even distributions in their pharmacy experience and practice setting. Only 10% of respondents had
pharmacogenomics education in formal pharmacy courses and 78% had no experience with pharmacogenomics in their continuing education. Most respondents (81%) agreed that pharmacists should have some knowledge of pharmacogenomics. Moreover, 57% agreed and 6% strongly agreed that pharmacists should be able to provide recommendations for therapy changes based on prior pharmacogenomics testing. However, only 26% agreed and 5% strongly agreed that they could identify reliable sources of information regarding pharmacogenomics. Those who had received recent continuing education in pharmacogenomics not only agreed to a significantly greater extent with the premise that pharmacists should be able to recommend appropriate therapy changes but also displayed greater confidence in their ability to do so (P < 0.001, Mann-Whitney test).

Implications: Our survey results indicate that there is a great need to develop educational materials for practicing pharmacists and in addition, devise an effective means to disseminate this information in order to facilitate the effective application of pharmacogenomics principles by pharmacists.

Efficacy of a Therapeutic Vaccine Using Mutated β-amyloid Sensitized Dendritic Cells in Alzheimer’s Mouse. Neel R. Nabar, University of South Florida, Chuanhai Cao, University of South Florida, Shufeng Zhou, University of South Florida. Objectives: In 2001, a clinical trial using a β-amyloid vaccine (human wild type Aβ peptide, AN-1792) showed that dementia scale scores of the active vaccine group were considerably lower than that of AD patients given the placebo. Unfortunately, severe adverse reaction occurred in about 6% of the patients, and after autopsy, one was confirmed to have died of meningocencephalitis due to an increase in Th1 response. We investigated a safer method to obtain sufficient anti-Aβ antibody titer without the use of an adjuvant, eliminating the Th1 response. The developed method focused on use of dendritic cells (DCs), the most powerful antigen presenting cell in the immune system. Method: This study utilizes mouse models of AD to study this mutant Aβ1-42 sensitized DC as a vaccine in vivo with regards to efficacy, safety, and mechanism of action through ELISA analyses, immunohistochemistry, behavioral testing, and flow cytometry analysis. The mutant Aβ1-42 peptide contains the same epitopes as the full length Aβ peptide with T-cell epitope mutations. Results: The results indicate that use of mutant Aβ1-42 vaccine results in durable antibody production, but wild type vaccine does not induce antibody response at all. The antibody generated from antigen sensitized dendritic cells is against the same epitope as other Aβ vaccines. Our result also showed cognitive function benefit without the global inflammation seen in prior Aβ vaccines. Additionally, there was a significant reduction in Aβ burden, and the mechanistic studies implicated the LXR/ABC1 pathway in reduction of Aβ burden. Implications: As this therapeutic treatment showed promising results in animal models and has many advantages compared to contemporary treatments, we believe with further development, this vaccine may be a viable clinical treatment for AD.

Etoposide Metabolites as Topoisomerase II Poisons. Elizabeth Gibson, Lipscomb University, David A. Jacob, Lipscomb University, Susan L. Mercer, Lipscomb University, Joseph E. Deweese, Lipscomb University. Objectives: While the anticancer agent etoposide is highly effective at poisoning topoisomerase II, etoposide is also metabolized into a catechol and a quinone in the body. The activity of these metabolites against topoisomerase II has not been fully examined. Therefore, we synthesized and purified these compounds in order to characterize their activity against topoisomerase II. Method: The research involved enzyme characterization assays using purified human topoisomerase IIα, purified plasmid substrate, and the metabolites of etoposide. Reaction products were electrophoresed on agarose or acrylamide gels before imaging for quantitative or qualitative analysis. Results: The results demonstrate that, similar to etoposide, the catechol and quinone both lead to an increase in DNA cleavage levels and an inhibition of ligation as quantified from agarose gels. Interestingly, the quinone leads to higher levels of DNA scission compared to etoposide or the catechol and also can inactivate the enzyme when incubated with the enzyme prior to DNA addition. Enzyme inactivation is likely linked to the ability of the quinone to cause covalent addition of the two halves as evidenced by denaturing gel shift assays. This addition is not seen with either etoposide or the catechol. Further, addition can be blocked by treating the reaction with a reducing agent. Implications: The data indicate that the catechol acts similar to etoposide while the quinone appears to have an additional function since it can cause redox-dependent inactivation and addition. This places etoposide quinone in a unique class as an apparently dual-acting topoisomerase II poison by both inhibiting ligation and covalently adding.
student ranking of reading, lecture, and simple video recordings. In pre-course surveys 76% ranked reading in the top two choices while in post-course surveys this number reduced to 59%. The only increase in preference was observed in VoiceThread® (26% to 35%). A notable finding in pre-course surveys was that 37% of students younger than 25yo preferred lecture while only 14% of students older than 25 had the same preference. Implications: Introduction of VoiceThread® in a class was well received by students. Further studies across different subjects and instructors in different years will be necessary to identify general patterns of student preference including strategies to use when implementing new learning strategies methods.

Evaluation of a Hybrid Learning Course Design to Enhance Student Learning of Molecular Biology. Samit Shah, South University, Arthur G. Cox, South University, Martin M. Zdanowicz, South University. Objectives: To describe the design, implementation and assessment of a hybrid-learning molecular biology course. Method: Pre-recorded lectures (modules) were created using a video capture system and distributed to students using an online course management system. Students watched the assigned modules prior to class, and class time was used for applying the theory in the modules to exercises designed to explore the material at a deeper level. Student perceptions of the use of modules and class exercises as a tool to enhance learning were examined using a survey with a five point Likert Disagree-Agree response scale. Achievement of learning outcomes was assessed through the use of multiple choice exams. Results: One hundred percent of the students participating in the survey indicated that the pre-recorded modules and class exercises helped enhance their learning. Over 95% of the students indicated that the course design helped them learn the material more effectively at all levels of Bloom’s taxonomy. Students overwhelming agreed that the course met its stated objectives with a mean rating of 4.83 out of 5.0. The test average on the first exam, which represented the material taught using the hybrid learning approach, was 83.4%. Implications: Combining pre-recorded modules with class exercises can allow instructors to devote more time to actively engage students in the learning process and help them develop a deeper understanding of the course material. A thoughtfully designed hybrid learning course can also promote better recall, understanding, application, analysis and integration of the material compared to a traditional lecture based course.

Identification of Novel Genetic Polymorphisms in STR Loci in Two Ethnic Minority Populations in China. Neel R. Nabar, University of South Florida, Jun Liang, University of South Florida, Shufeng Zhou, University of South Florida. Objectives: DNA profiling for individual identification has been relatively well developed, however individual identification in complicated cases is still difficult. The Combined DNA Index System (CODIS), a database funded by the FBI, contains information on specific short tandem repeats (STRs) in the human genome that have been validated as useful and informative for forensic practice. In order to increase scope of individual identification, we are interested in validating non-CODIS STR loci as useful for forensic practice. Method: In this study, we investigated 9 polymorphic STR loci (D18S1364, D12S391, D13S325, D6S1043, D2S1772, D11S2368, D22-GATA198B05, D8S1132 and D7S3048), which are not included in the standard sets of forensic loci, in 181 Miao and 166 Gelao unrelated individuals in the Guangxi municipality, South China. Genepop V 4.0 was used to perform a Hardy-Weinberg equilibrium test after allelic identification using PCR. PowerStats V1.2 software was used to calculate forensic parameters with the cumulative matching probability of the 9 STR loci in Miao and Gelao population. Results: No deviations from Hardy-Weinberg Equilibrium were observed in these two populations. The cumulative matching probabilities of the 9 STR loci in the Miao and Gelao populations were calculated as 5.18×10-8 and 1.20×10-8 respectively. The cumulative exclusion powers were 0.9999894 and 0.9999064, individually. Implications: Our study showed these 9 STRs as highly informative and suitable for use as candidate genetic markers in genetics and forensic practice. As these STRs are easily typed using commercially available kits, these STRs can serve as good and cogent biomarkers for complementary use with the CODIS STRs for individual identification.

Individualized Reflective Learning Through Portfolio Use in Pharmacy School Education. Casey R. Utter, St. John Fisher College, Richard J. Bova, Jennifer L. Mathews, St. John Fisher College, Melinda Lull, St. John Fisher College. Objectives: The ability to teach one’s self is a skill that will greatly enhance students in their future professional lives. To this end, learning portfolios have often been used longitudinally as a development tool. The objective of this study was to design and implement the use of an electronic portfolio to individualize student learning experiences in a one-semester pharmacy elective course. Method: In a forensic toxicology pharmacy elective course, students were asked to find specific articles related to lecture material but geared toward their individual interests, attach it to an online portfolio, and answer four short reflective questions. Students then brought the assignments to class and discussed their findings in small groups. The portfolios were maintained throughout the semester and were graded for completeness only. At the end of the semester, students were asked to participate in a survey rating the relevance, usefulness, productiveness, and overall impression of the portfolios using a Likert scale of 1-5 (1= strongly disagree; 5 = strongly agree). Results: Students responded portfolio assignments were a productive use of time (4.29/5), relevant to the course (4.71/5), a good way to individualize the course (4.71/5), provided a good basis for discussion (4.57/5), and would recommend use of portfolios in the course in the future (4.6/5). Implications: The use of individual portfolios helped to promote self-learning within an elective course in pharmacy school. As students were evaluated only for completeness, students felt able to reflect freely on the topics they chose, promoting fruitful discussion and an effective learning environment.

Inhibition of Pathological Signaling Pathways Does Not Detrimentally Impact Exercise Capacity or Physiological Cardiac Growth. Stephen W. Luckey, Regis University, Christopher D. Haines, University of Colorado, Boulder, Leslie A. Leinwand, University of Colorado, Boulder. Objectives: Cardiac hypertrophy, an increase in heart mass, can be categorized as either physiological or pathological. Physiological hypertrophy is a beneficial adaptation resulting from exercise. Pathological hypertrophy is growth associated with disease (e.g. hypertension) and is characterized by cardiac remodeling and dysfunction, and heart failure. This study aims to determine whether beneficial physiological hypertrophy can occur while inhibiting signaling pathways that contribute to pathological hypertrophy. Method: Exercise capacity and cardiac adaptation to exercise were examined in transgenic mice expressing active glycogen synthase kinase-3β (GSK-3β), inhibition of Ca2+-calmodulin-dependent protein kinase II (CaMKII), doubly transgenic mice containing both CaMKII inhibition and active GSK-3β, and knockout mice deficient in mitogen-activated protein kinase kinase kinase (GSK-3β) were used as controls. Male and female mice voluntarily exercised on cage wheels at 12-15 weeks of age, and exercise values for distance and time were recorded daily. After 21 days, exercised and sedentary mice were sacrificed, and body and heart measurements were recorded. Results: All transgenic mice maintained similar exercise capacity as control mice. Female mice in all models...
exhibited enhanced wheel-running ability compared to males. Cardiac mass increased as a result of exercise in all female and male mouse models. Implications: These data demonstrate that inhibition of specific pathologic signaling pathways does not detrimentally impact exercise capacity or physiological cardiac growth. This suggests that the beneficial effects of physiological hypertrophy can occur even while blocking pathological signaling pathways, a finding which has implications for possible identification of new therapeutic targets for heart failure.

Joint Comprehensive Curricular Activities Between P1 and P2 Students to Promote and Assess Student Learning. Reza Karimi, Pacific University Oregon, Nathan Shipman, Cory Kantorowicz, Abby Frye. Objectives: To build a learning environment where first year (P1) and second year (P2) students interact with each other to complete joint curricular activities, review and present clinical studies, and are able to identify their strengths and weaknesses in curricular matters. Method: A comprehensive end of year curricular process was established and implemented over 4 consecutive days in which P1 and P2 students interacted with each other to complete a series of joint curricular activities. The activities included evaluation, review, and presentation of published clinical studies; peer review of patient counseling skills; submission of a group examination, and review and discussion of a series of major pharmacotherapeutic posters. Two surveys were generated to capture students’ impressions of the implemented joint curricular activities. Results: Our quantitative survey results indicated that approximately 75% of P1 students (N=95) and 90% of P2 students (N=94) agreed that the joint curricular activities assisted them in identifying their curricular strengths and curricular areas that they needed to improve. In addition, 71% and 85% of P1 and P2 students, respectively, agreed that the curricular activities encouraged them to be self-directed learners. Furthermore, our assessment results indicated that the joint review, evaluation, and presentation of clinical studies assisted students in improving their professional presentation skills. Implications: The joint P1 and P2 curricular activities promoted and assessed student learning and the designed assignments can be easily implemented to provide a forum for collegial discussions and learning about P1 and P2 curricular topics among P1 and P2 students.

Kappa Opioid Receptors: Possible Role in Cirrhosis with Ascites. Helmut B. Gottlieb, University of the Incarnate Word, Nahad Berenji, University of the Incarnate Word, Yolanda Rangel, Pacific University Oregon, Cynthia Franklin, University of the Incarnate Word, Glenn Toney, University of Texas Health Sciences Center at San Antonio. Objectives: The objective of this study is to examine alterations in the kappa opioid system associated with an experimental model of hyponatremia, cirrhosis with ascites. Inappropriate vasopressin (AVP) release has been shown to increase water retention, which leads to dilutional hyponatremia. The administration of kappa (k) agonists has been shown to increase urine outflow via inhibition of AVP secretion. Although kappa opioid receptors can modulate AVP secretion in healthy animals, the role of kappa opioid receptors under hyponatremia has yet to be determined. Method: Rat’s common bile duct was isolated and cut between two ligatures (BDL). Controls (sham) were subjected to the same protocol but the bile duct was not ligated. After one month, all BDL rats were jaundiced and had abdominal ascites. Rats were anesthetized and decapitated. Brain punch samples from sham and BDL rats were analyzed using Western blot. Plasma osmolality, hematocrit, and AVP plasma levels were measured from blood samples. Results: Compared to sham, plasma osmolality and hematocrit were significantly decreased in the BDL rats indicating hypoosmolality and hypervolemia. BDL rats had significantly higher basal levels of AVP, and kappa opioid receptor expression increased in areas of the brain known to be involved in electrolyte and water balance, e.g., hypothalamus. Implications: Our results suggest that during cirrhosis, kappa opioid receptor expression changes in brain regions associated with water and electrolyte homeostasis. These results raise the possibility that drugs targeting k opioid receptors could selectively facilitate water excretion in water retaining diseases such as cirrhosis. This work was supported by SC2HL104639.

Osteogenesis of Goat Bone Marrow Mesenchymal Stem Cells Induced by Transfection of BMP-2 and bFGF. Jun Liang, University of South Florida, Qifeng Guo, Department of Orthopedics, Guangzhou First Municipal People’s Hospital Affiliated to Guangzhou Medical College, Guangzhou 510180, China, Shufeng Zhou, University of South Florida. Objectives: The advent of tissue engineering and stem cell based regenerative medicine has provided hope for a novel approach to managing bone degeneration, since bone marrow mesenchymal stem cell (BMSC) strategies have shown promise in preliminary studies. Both bone morphogenetic protein-2 (BMP-2) and basic fibroblast growth factor (bFGF) have been implicated in inducing bone formation from BMSCs. However, exogenous bone induction factors easily lose activity through protease breakdown and thus cannot trigger continuous local stimulation and bone induction effect. On the other hand, gene therapy resulting in integration into the host genome can overcome these issues with direct application of exogenous growth factors. This study investigated the gene expression and bone formation of goat BMSCs transfected by adenovirus-mediated BMP-2 and bFGF. Method: After construction of a recombinant adenovirus Ad-BMP2-bFGF-GFP vector, goat BMSCs were transfected with Ad-BMP2-bFGF-GFP and Ad-GFP at different multiplicity of infection values. Expression levels of BMP-2 and bFGF were analyzed by ELISA and staining was performed to determine the level of osteoblast differentiation. Results: After 48 hr, the results indicated significant expression of BMP-2 and bFGF within Ad-BMP2-bFGF-GFP group and differentiation of BMSCs of the Ad-BMP2-bFGF-GFP treatment group into osteoblasts as confirmed by ALP staining. The difference was most obvious 6 days after transfection, and was detected over a period of 20 days. Implications: The data lay the foundation for bone regeneration through stem cell use, with the potential of increasing the efficacy of skeletal reconstructive treatments.

Pharmacy-Student Outreach: Bridging the Gap from an Inner-City High School to Pharmacy School. Jennifer L. Mathews, St. John Fisher College, Chirag Dave, St. John Fisher College, Mohammad Mohammad, Gabriela Cipriano, St. John Fisher College, Fang Zhao, St. John Fisher College, Brooke Lowry, St. John Fisher College. Objectives: This program aimed to educate inner-city high school students about opportunities in the pharmacy profession. Method: The outreach program was conducted with Thomas A. Edison High School (90% African American, 6% Hispanic). The program consisted of 2 phases and targeted 9th and 10th grade students in the science, technology, engineering, and math track. Phase-1 consisted of a presentation at the high school that included information about prerequisites, the admissions process, curriculum, and pharmacy career paths. Phase-2 consisted of the same students visiting the Wegmans School of Pharmacy. Students were given a tour and conducted a laboratory exercise. At the conclusion of both phases a voluntary survey was administered. Results: Survey questions were evaluated using a Likert Scale (1= strongly disagree; 5= strongly agree). Students (n=43) agreed with the following statements: the presentations at their school (4.1/5.0) and the School of Pharmacy (4.1/5.0) were helpful in
giving them an idea of what pharmacy is like as a career. Students also indicated that they would recommend future sessions at their school (4.0/5.0) and that they would be interested in more activities at the School of Pharmacy (4.0/5.0). **Implications:** Continued programming and exposure to pharmacy will help encourage these high school students to consider pharmacy as a profession. Utilizing pharmacy students in the outreach is beneficial because they can relate to the students and help bridge the gap between the schools.

**Preparing Pharmacy Students for the Next Generation of Pharmacy from Pharmacogenomics to Biological Therapeutics.** Christopher L. Farrell, Presbyterian College, Karen D. Frederick-Duus, Presbyterian College, David H. Eagerton, Presbyterian College, Nancy G. Pedigo, Presbyterian College, Edward Gouge, Presbyterian College. **Objectives:** At Presbyterian College School of Pharmacy (PCSP), a biotechnology-based lab practicum has been developed with the goal of providing Pharmacy students with the biotechnology knowledge to understand the next generation of pharmacogenomics and biological pharmaceuticals. This first year (P1) fall course includes multidisciplinary modern biotechnology techniques integrated with Biochemistry, Immunology, and Pharmaceutical Calculations coursework. **Method:** The integration of biotechnology hands-on laboratory research with didactic coursework enhances student engagement and learning. Two sections of forty students, meet weekly throughout the semester. Complex topics are conveyed via four methodologies: (1) Didactic lectures, where an expert in the chosen field explained the science of the biotechnology concept. (2) Inquiry based laboratory experience, in which students carry out the research project. (3) Reinforcement of the relevance of the biotechnology to human health and disease through case-based studies, applying functionality of the assays in pharmacological-based vignettes. (4) Additional reflective online modules, reinforcing basic health science concepts. **Results:** Students are assessed by the weighted average of four contributing scores: weekly reports, lab quizzes, participation, and the final examination grade. Course evaluations of the biotechnology lab were rated highly by the students with respect to originality, variety, utility, time-management and enjoyment. **Implications:** This multidisciplinary biotechnology course prepares our Doctor of Pharmacy candidates with operative, team-approached and problem-based experiences they will encounter, not only as students, but more importantly, as leaders and pioneers in the future pharmacy workforce.

**Protective Effect of Acetaminophen on Renal Dysfunction in the Obese Zucker Rat.** Cuifen Wang, Marshall University, Eric Blough, Marshall University, Ravikumar Arvapalli, Marshall University, Satyanarayana Paturi, Marshall University, Nandini Manne, Marshall University, Miaozong Wu, Marshall University. **Objectives:** Kidney disease affects more than 20 million U.S. adults, which if allowed to proceed to unchecked can lead to death. Obesity has been recognized as a major and independent risk factor for the development of kidney disease. Oxidative stress has been suggested to promote the pathophysiological development of obesity-induced renal injury. The objective of study was to determine whether ingestion of acetaminophen is beneficial in delaying or preventing the pathological progression of renal injury in the obese Zucker rat. **Method:** Four week old, male obese Zucker rats (N=6) were daily treated with 30 mg acetaminophen/kg body weight via drinking water for 26 weeks. Age matched obese and lean Zucker rats were maintained as controls. Kidney and urine were collected from anesthetized rats at the age of 30 weeks for analysis of renal function and structure. **Results:** Compared to lean control animals, urinary total protein and albumin content was higher in the untreated obese rats. Analysis of tissue histology indicated a significant increase in glomerulosclerosis, tubulointerstitial fibrosis, immune cell infiltration, and podocyte damage in untreated obese rat kidney. Importantly, these indices of renal injury and dysfunction were significantly decreased with acetaminophen treatment. Additional biochemical analysis showed a significant decrease of renal reactive oxygen species content in the acetaminophen-treated animals. **Implications:** These data suggests that chronic acetaminophen ingestion is associated with improved kidney structure and function in the obese Zucker rat and that this effect may be mediated, at least in part, by a reduction in renal oxidative stress.

**The ErbB4 Receptor Tyrosine Kinase Is A Context-Dependent Tumor Suppressor and Oncoprotein.** Christopher P. Mill, Auburn University, Richard C. Bird, Auburn University College of Veterinary Medicine, David J. Riese, Auburn University. **Objectives:** ErbB4 is closely related to the Epidermal Growth Factor Receptor (EGFR/Erbb1), ErbB2 (HER2/Neu), and ErbB3 receptor tyrosine kinases. EGFR and ErbB2 are oncoproteins whose activity is elevated in many human tumors. However, less is known about ErbB4 function in human malignancies. **Method:** In order to assess ErbB4 function in human tumor cell lines, we have used ErbB4 peptide growth agonists, the constitutively-homodimerized and –active ErbB4 Q646C mutant, an ErbB4 ribozyme, and ErbB4 siRNA. We have also used the Baf3 human lymphoid cell line, which is devoid of endogenous ErbB4 expression, to study the effects of heterologous ErbB4 signaling and signaling by ErbB4 mutants. **Results:** The ErbB4 Q646C mutant inhibits clonogenic proliferation of human tumor cell lines. This tumor suppression requires ErbB4 kinase activity, ErbB4 phosphorylation and ErbB4 interactions with numerous intracellular proteins. However, ErbB4 agonists stimulate ErbB4 coupling to cell proliferation, motility, and invasiveness. This requires ErbB4 sites of tyrosine phosphorylation and either EGFR tyrosine kinase activity or ErbB2 kinase activity, but not ErbB4 kinase activity nor sites of ErbB2 tyrosine phosphorylation. **Implications:** These data suggest that ErbB4 homodimers function as tumor suppressors, whereas ErbB4-ErbB2 or ErbB4-EGFR heterdimers function as oncogenes. This suggests that targeting EGFR or ErbB2, but not ErbB4, may be effective in treating ErbB4-dependent tumors. We are exploring whether this strategy may be effective against canine models of human tumors.

**Therapeutic Effect of Transplanting Magnetically Labeled BMSCs in Acute Liver Injury Rat Model.** Shufeng Zhou, University of South Florida, Jun Liang, University of South Florida, Xiaowu Chen, Shunde First People’s Hospital, Southern Medical University. **Objectives:** There are a number of studies on the application of bone marrow stromal stem cells (BMSCs) for the treatment of chronic liver diseases, but only few reports about the use of BMSCs for the treatment of traumatic liver injury. This study aimed to study the therapeutic effect of fluorescence-labeled bone marrow stem cells administering to male SD rats subject to traumatic liver injury. **Method:** Male SD rats with a 70% resection of the liver were injected with feridex-labeled BMSCs which could be induced to functional hepatocytes in vitro. Liver function was assayed and the liver scanned by 1.5-T MRI at 12 hrs and on days 1, 3, 5, 7, and 14 post-operation. The pathological changes of liver sections were monitored. **Results:** The serum levels of alanine aminotransferase (ALT), aspartate aminotransferase (AST), alkaline phosphatase (ALP), direct bilirubin (DBIL), and total bilirubin (TB) in the transplantation group were significantly lower than the control group. The MRI showed rats of the transplantation group had an oval low signal area at 12 hr after operation; the low signal range gradually expanded and the signal intensity gradually decreased over 14 days after operation. The low signal range in the control group.
disappeared 12 hr after the operation. After Prussian blue staining, rats of the transplantation group contained blue granules with no significant hypertrophy or edema in hepatocytes, while the control group showed no blue granules with significant hypertrophy and edema. The BMSCs transplanted into the injured rat liver gradually migrate to the surrounding liver tissue and partially repair the liver surgical injury in rats. **Implications:** BMSCs may represent an effective therapeutic approach for acute liver injury.

**Validation of a Novel Sensor System for Real Time Monitoring of Urine Bag Fill Levels.** Rebecca Widder, Cedarville University, Anthony Boiarski, Future Path Medical, LLC, Ronald Wathen, Future Path Medical, LLC, Elisha R. Injeti, Cedarville University. **Objectives:** Management of medication therapy in direct patient care settings utilizes evidence-based therapeutic guidelines and emerging technologies. However, the emerging technologies that assess patient conditions are undergoing dramatic changes especially in collecting and transferring patient relevant data. The current project tests the reliability of a novel sensor system that wirelessly reports temperature and % fill levels of urine collection bags. **Method:** For this study, the new sensor system was tested with artificial urine solutions varying in their concentrations of protein and glucose as well as temperature. The % fill levels recorded by the sensor are compared with actual measured values to evaluate the % fill levels of urine collection bags. **Results:** Over a wide range of changes in the concentrations of protein, glucose and temperature, the sensor maintained its accuracy within 5% error of the actual fill levels. At temperatures below 25 degree Celsius and 0mg/mL glucose concentration of sample, the 40% fill levels varied by 6.7% and 5.3% respectively. However, at 80% and 95% fill levels that are clinically important, the sensor gave reliable and accurate data of less than 3% error at any given concentration and temperature. **Implications:** The results indicate that the new sensor collects and transmits reliable information on the fill levels of urine bags. This technological advance in sensor systems may enable the health care professionals to provide a better and efficient method for real time monitoring of patients using urine collection bags in direct patient care setting.

**CHEMISTRY**

**Completed Research**

**Anticonvulsant Active Aryl Substituted Enaminones and Their Activity as Positive Allosteric Modulators of GABA-A Receptors.** Patrice L. Jackson, University of Maryland Eastern Shore, School of Pharmacy, Ze-Jun Wang, Howard University College of Medicine, Liqin Sun, Howard University College of Medicine, Thomas Heinbockel, Howard University College of Medicine, Kenneth Scott, Howard University, School of Pharmacy, Tawes Harper, University of Maryland Eastern Shore, School of Pharmacy, Chauntel Kellar, University of Maryland Eastern Shore, School of Pharmacy, Abdulasel Suleyman, University of Maryland Eastern Shore, School of Pharmacy, Uche Etunnuh, University of Maryland Eastern Shore, School of Pharmacy, Laura S. Figgs, University of Maryland Eastern Shore, School of Pharmacy, Meagan Bratcher, University of Maryland Eastern Shore. **Objectives:** Epilepsy is a chronic neurological disorder that affects up to 2% of the world’s population. Discovery of novel agents that are safe and efficacious are key goals for optimally treating epilepsy. In this study, a small library of enaminone analogs, with subeutaneous pentyleneretrazole (scPTZ) and Maximal Electroshock Seizure (MES) activity were investigated to determine the cellular target(s) and mechanisms underlying their inhibitory or excitatory properties. **Method:** The synthesized aryl substituted enaminones were initially evaluated for anticonvulsant activity by the National Institute of Neurological Disorders and Stroke, NIH. The MES and scPTZ active analogs were evaluated using acute slices of the mouse main olfactory bulb (MOB) and whole-cell patch-clamp recordings from mitral cells (MCs). A brain slice was placed in a recording chamber mounted on a microscope stage and maintained at 30 +/- 0.5C by superfusion with oxygenated artificial cerebrospinal fluid (ACSF). **Results:** Recordings were obtained from 166 MCs with whole-cell recordings in mouse MOB slices from 94 animals. Among the compounds evaluated, KRS-5-Me-4-OCF3 hyperpolarized the membrane potential of MCs with suppression of spontaneous firing at an EC50 of 24.5 μM. The analog evoked inhibitory effects in the presence of glutamate and GABA-B receptor antagonists; however the inhibition of MC excitability was completely blocked by the GABA-A receptor antagonists picrotoxin and gabazine. KRS-5-Me-4-OCF3 inhibitory effects were also blocked in the presence of a benzodiazepine site antagonist. **Implications:** KRS-5-Me-4-OCF3 was found to potently inhibit excitability in the MCs of the mouse MOB. This effect is mediated by direct action on GABA-A receptors at the benzodiazepine site.

**Cellular Translocation of a γ-AApeptide by Mimicking Tat Peptide.** Ge Bai, University of South Florida. **Objectives:** To make potential drug carriers that can penetrate the cell membrane and perform stable under protease degradation. **Method:** We developed a new class of peptide mimics termed γ-AApeptides from the structure of γ-chiral PNAs. Then we used fluorescence flowcytometry and confocal fluorescence microscopy to measure the penetrating abilities of the γ-AApeptides we made. **Results:** The γ-AApeptides we made showed high penetrating ability which is comparable to or even better than Tat peptide which is a well-known penetrating peptide already. **Implications:** Our γ-AApeptides may become a drug carrier later for its strong penetrating ability and stable properties under protease digestion.

**Changes in Lecture Handout Role and Value as the Professional Curriculum Evolves.** Robin M. Zavod, Midwestern University’s Chicago College of Pharmacy, Sandra K. Tooley, Midwestern University’s Chicago College of Pharmacy. **Objectives:** The study objective was to assess the changes in perceived value and role of the lecture handout as an increase in active learning and use of technology was implemented across the curriculum. **Method:** Survey items that measure lecture handout role and value were piloted and clarifying modifications made. Data was collected at three points across the curriculum, including entry into pharmacy school, as well as completion of the PS-1 and PS-2 years. Six student cohorts were surveyed, three educated in the “old curriculum”, and three in the “new curriculum”. Descriptive and inferential statistics were performed. **Results:** Regardless of curriculum type students prefer fully completed handouts. Statistically significant increases in preference occurred over time. The most valuable roles of fully completed handouts were identified as “It allowed me to pay complete attention to the lecturer.” followed by “It was easier to study from because I had all the notes needed to study for the exam.” Evaluation of all handout types (regardless of curriculum type) indicates that the most valuable roles are “Study guide for outside of lecture learning.” followed by “Supplement to lecture material presented.” Statistically significant decreases in these roles occurred over time and were coupled with statistically significant increases in the role “Resource for use on rotations/practice of pharmacy.” **Implications:** Irrespective of learning modalities used in the classroom, as the difficulty of the professional curriculum increases students increasingly value a fully completed handout. Surprisingly only limited changes in role were observed.
Evaluation of a Remediation Plan in a Medicinal Chemistry and Pharmacology Course Sequence. Melanie Engels, University of Michigan, Mustapha A. Beleh, University of Michigan. Objectives: This project explores the success of a remediation plan instituted in an integrated Medicinal Chemistry and Pharmacology course sequence at the College of Pharmacy, University of Michigan. The in-course remediation targets struggling students on unit exams, who score below 70%. The goal of the plan is to ensure that students are competent in every section of the course and provide assistance to struggling students to achieve such competencies. Method: Students who fail any of the unit exams are required to go through remediation, where they are given two weeks to restudy the material covered in that section and then are reassessed using a minimal competency exam. Students are given a list of competencies and some studying aids during these two weeks. Students may get points back towards the unit exam once they successfully complete remediation, but not to exceed the 70% mark on the unit exam. Results: The study found that student who successfully completed remediation scored consistently higher on questions from that unit exam on the final cumulative exam than their peers who scored between 70-75% on the unit exams and did not go through remediation. The remediation group scores were comparable to the scores of students scoring between 75-80% on unit exams using similar criteria. Overall, students in this course sequence favored the inclusion of remediation and all students who went through remediation felt it provided them with a great educational experience. Implications: The success of this remediation plan may lead to its inclusion in other Pharm. D. courses in the future.

Novel Cycler Based Antimalarials: Regioselective Synthesis of 4,10-bis(7-chloroquinoline)-1,4,7,10-Tetraazadodecane. Prince N.A. Amoyaw, Southwestern Oklahoma State University, Caroline Burnett, Southwestern Oklahoma State University, Babu Tekwani, The University of Mississippi, Ronald F. Borne, The University of Mississippi, M. Omar F. Khan, Southwestern Oklahoma State University. Objectives: Based on our previously developed novel cyclen (1,4,7,10-tetraazadodecane) based antimalarial agent, 4,10-bis(7-chloroquinoline)-1,4,7,10-cyclen, the objective of the present study is to conduct regioselective synthesis of new derivatives. In the long run, synthesis and SAR and in vitro metabolism study of effective and efficacious antimalarial agent will be conducted. Method: In a four step moderate to high yielding synthetic route, the synthesis of 4,10-bis(7-chloroquinoline)-1,7-dimethyl-1,4,7,10-tetraazadodecane has been accomplished. Glyoxal aminal protection of cyclen followed by symmetrical N-alkylation with methyl iodide to afford the 1,7-diprotected intermediate, which was converted to the target product in reasonable yield. Results: The average total yield for the final product using the protection-derivatization-deprotection route is 50%, compared to the reported yield of ~35% by using the direct derivatization method. All the intermediate compounds as well as the target compound have been characterized by both 1H and 13C-NMR spectroscopy. Implications: The N-functionalization of tetraazamacrocycles, for example, tetraaza-cyclodecane has been extensively pursued due to its diverse medical and pharmaceutical applications. N-Derivation could be achieved in two ways: by direct derivatization and by protection-derivatization-deprotection. The latter is considered as the regioselective approach as it is more probable to obtain the symmetrical N-dialkylated polyaza macrocyclic derivatives via this approach. Newer derivatives will be synthesized by both approach and tested for antiparasitic activity as well as in vitro metabolic stability. It has enormous implication of getting new therapeutic agent for treatment of malaria and other parasitic diseases in the future.

Peer Assessment in Small Group Projects in the Pharmaceutical Biochemistry Sequence at Chicago State University. Nora Kirby-Swenson, Chicago State University, Lubna Judeh, Chicago State University, Melany Puglisi-Weening, Chicago State University. Objectives: The purpose of this study is to: (1) ascertain the students’ perceived value
of peer assessments in a first year science course in a pharmacy program; and (2) assess student attitudes regarding the feedback of the peer assessment. **Method:** A twenty-two items instrument was administered to student pharmacists in all four professional classes at Chicago State University. The questionnaire asked students about their experience in peer assessment in the Biochemistry course sequence. **Results:** Almost 40% of the students from all the classes found it somewhat challenging to be objective in the peer review process. Fifty-one percent of the third year professional students felt that peer evaluations did not improve group dynamics, while approximately 45% of the students in the first and second year professional curriculum saw an improvement. In addition, 45% of the students in the first and second year professional curriculum said that that had a higher awareness of themselves as a member of a team. Fifty percent of the third year students did not feel that there had improved self-awareness as a result of the peer assessment process. Overall, students said that peer evaluations contributed to their personal growth and improved group communication. **Implications:** Student pharmacists feel that the peer assessment process is a beneficial component of the overall evaluation process within the Biochemistry course series at Chicago State University; however perceived value of the feedback appears to be less valuable to student pharmacists in the third and fourth year of fourth year of the curriculum.

**Prior Experience and Perceived Value of Peer Assessment for Incoming Student Pharmacists at Chicago State University.** Lubna Judeh, Chicago State University, Nora Kirby-Swenson, Chicago State University, Melany Puglisi-Weening, Chicago State University. **Objectives:** The purpose of this study is to: (1) assess the experience and perceived value of peer assessments of the incoming student pharmacists enrolled in a first year science course; and (2) assess student attitudes regarding the feedback of the peer assessment after their first semester at Chicago State University College of Pharmacy. **Method:** A nineteen items pre-assessment was administered to first-year student pharmacists in August 2011 and a twenty-two items post-assessment in January 2012. The pre-assessment questionnaire asked students their experience with peer assessment prior to entering pharmacy school and how they perceive the value of peer assessment in the pharmacy curriculum. The post-assessment questionnaire asked students about their experience in peer assessment in the Biochemistry I course. **Results:** Eighty-four percent of students participated in group work prior to entering the program, and 57% have previous experience with a peer review process. Students saw themselves as being able to contribute to the group in a variety of roles. In the post-survey, 71% of the students thought it was not very challenging to be objective, and 26% felt that feedback from the evaluation significantly improved the overall group dynamics. Almost 70% of the students felt they had a higher awareness of themselves after the peer review process and saw the process as a tool for personal growth. **Implications:** Overall, the student pharmacists in the class of 2015 feel that the peer evaluation process is a valuable component of the assessment process in a basic science course at Chicago State University.

**Using Molecular Modeling to Integrate Biochemistry and Medicinal Chemistry in a Pharmacy Curriculum.** Sonali Kurup, Roosevelt University, Lawrence A. Potempa, Roosevelt University. **Objectives:** To integrate concepts in biochemistry and medicinal chemistry by utilizing two molecular modeling assignments. **Method:** Student cohorts were assigned the first molecular modeling assignment during the Biochemistry course and the second assignment during the course on the Principles of Drug Action and the Autonomic Nervous System. The biochemistry assignment focused on enzyme structure, function and inhibition, while the medicinal chemistry assignment emphasized drug properties. For both assignments students were required to answer a series of questions while visualizing the enzyme, drug-bound enzyme complex or drug-receptor complex with Molecular Operating Environment (MOE), a molecular modeling software. **Results:** Student responses from the assignments were related to the mechanism of action of drugs. Using protein kinases as examples, students studied enzyme-substrate and enzyme-inhibitor interactions and identified active-site directed enzyme inhibitors and allosteric inhibitors. During the second assignment, by comparing a series of estradiol analogs in the estrogen receptor, students addressed the impact of pKa, conformations and configurations of drug molecules on target receptor and enzyme binding. This was further elaborated on during the lecture component of the courses wherein students identified estrogen receptor agonists and antagonists by comparing the overall conformation of the drug-bound receptor. **Implications:** A thorough understanding of drug action is essential for therapeutic decision-making. Using molecular modeling to correlate key principles in medicinal chemistry and biochemistry may improve an understanding of the molecular basis of drug action.

**CONTINUING PROFESSIONAL EDUCATION**

**Completed Research**

**Effectiveness of Blended Teaching Method for Pharmaceutical Calculations.** Karyn I. Cotta, South University, Samit Shah, South University, Michaela M. Almgren, South University, Lilia Z. Macias-Morairity, South University. **Objectives:** To compare the effectiveness of teaching Pharmaceutical Calculations (PC) course using pre-recorded lectures (modules) versus in-class didactic lectures (traditional method). **Method:** PC course content was divided into two sections. For section I, students were provided modules prior to class and class time used solving challenging practice problems. Section II taught by traditional method supplemented with in-class practice problems of increasing complexity. The students in both sections were given frequent quizzes and homework practice problems. Exam 1 and 2 were administered at the end of section I and II respectively and a final exam at the end. Students completed an on-line survey at the end of the course consisting of 5 point Likert questions providing feedback on each teaching method. The quantitative efficacy of the teaching methods was assessed by comparing, exam 1 and 2 scores, Final exam (section I and II scores) and 2011 and 2009 exam 1 scores, taught by modules and traditional method respectively. Independent t-tests, paired t-tests, and Wilcoxon signed rank tests were used to analyze data with SPSS version 16. **Results:** Student survey reported modules better prepared them for exams versus the traditional method (p<0.01). Exam 1 and 2 scores were 84% and 78% respectively (p<0.01). Final exam, sections I and II scores were 91% and 84% respectively (p<0.01). 2011 and 2009 exam 1 scores were 84% and 77% respectively (p<0.01). **Implications:** The students’ belief that modules helped better prepare them for exams was confirmed by the statistical improvement in their exam scores which was around 7% higher.

**Effects of Passive vs. Active Learning Strategies on Knowledge Acquisition in Continuing Pharmacy Education.** Tracy K. Pettinger, Idaho State University, Brooke Pugmire, Idaho State University, Eliza Borzadek, Idaho State University, Catherine A. Cashmore, Idaho State University. **Objectives:** The objective of the study was to determine if either problem-based or audience response system-based (ARS) active learning strategies, when compared to didactic lecture, improve scores for academic achievement in continuing pharmacy education (CPE). **Method:** A College of Pharmacy-sponsored annual
CPE program conducted at three cities around the state was used to compare learning strategies. Two separate one-hour presentations were selected. The presentation content, slides, and speakers were the same at all sites. The learning approaches alternated at each location and included ARS-based active learning, problem-based active learning, and didactic only passive learning control. The primary outcome measure was the between group comparison in mean scores for academic achievement on a three-item post-test over the program content administered immediately following the presentation. Retention was also evaluated at 4 weeks using the same post-test. Results: Topic one achievement scores were 70.7%, 75.2%, and 70.3% for the control, ARS-based, and problem-based groups, respectively (P > 0.05 for all comparisons). Achievement scores for topic two were 72.1%, 73.0%, and 80.3% (P = 0.04 for control vs. problem-based; P > 0.05 for other comparisons). Retention scores for topic one were 70.7%, 68.5%, and 71.3% for the control, ARS-based, and problem-based groups, respectively (P > 0.05 for all comparisons). Topic two retention scores were 75.9%, 68.7%, and 71.6% (P > 0.05 for all comparisons).

Implications: Both short- and long-term knowledge assessments were comparable between all active and passive learning groups. The ACPE mandate to include active learning formats in CPE may not be supported by these findings.

Gaps in Pharmacist Knowledge of Drugs in Pregnancy and Breast Feeding. Jonathan R. Ptachcinski, Duquesne University, Autumn L. Stewart, Duquesne University. Objectives: Assuring medication safety in pregnant and lactating women is a responsibility of pharmacists. The purpose of this study is to identify the state of pharmacist knowledge pertaining to drug use in pregnancy and lactation. Method: The knowledge of drug use in pregnant/lactating women was assessed among practicing pharmacists. Survey items collected demographics and knowledge level using 5-Point Likert Scale questions (1 = Not at all, 5 = Very). Pharmacists were surveyed using Survey Monkey® and recruited by email via list serve. Descriptive statistics were used in the data analysis. Results: 102 participants accessed the survey, the majority of whom report practicing in community pharmacy (41.2%) and having a PharmD (54.5%); 59.8% reporting being in practice for over 10 years. Respondents were least knowledgeable of therapies used in yeast infections, rashes, and diarrhea. When asked to rate knowledge of drugs which should be strictly avoided in pregnancy, only 12.5% responded as “Very Knowledgeable” and 61.4% self-ranked their knowledge at <3. When asked to rate their knowledge of drugs which should be strictly avoided in breastfeeding, only 4.6% responded as “Very Knowledgeable” and 79.9% self-ranked their knowledge at <3. More than half of pharmacists (79.7%) ranked themselves at <3 when asked to rate their knowledge of drug characteristics that affect transfer into breast milk. Implications: Despite extensive training and experience, pharmacist knowledge of drug safety in pregnant and lactating women appears surprisingly low. The results of this study can be used to target interventions to decrease knowledge gaps in pharmacy education and continuing professional development.

Irish Students’ Perceptions of the Importance of Professional Competencies: Where Do We Draw the Line? L. Douglas Ried, University of South Florida, Richard O’ Sullivan, School of Pharmacy, University College Cork, Jennifer Archer, Jennifer Archer Consulting, Laura Sahn, University College Cork. Objectives: Similar to the paradigm shift in the US, the pharmacy curriculum in Ireland is shifting from a knowledge-based to a competency-based degree programme. Core competencies were identified from the 2009 AACP Curriculum Summit as central to pharmacists’ future role (Jungnickel 2009). As future practitioners, we were interested in describing those competencies that Irish student pharmacists thought most important. Method: Students enrolled in the School of Pharmacy, Cork (n=213) were eligible. Data collection took place in January through February 2012. In addition to demographics, students completed a paper-and-pencil questionnaire regarding the importance of thirty competency statements to pharmacy practice. Using a Visual Analogue Scale, students marked a 10 centimetre line indicating the extent that each competency was “not important at all” (0) or “most important of all” (10). Results: Sixty percent of students (n=119) completed the questionnaire (60.5% female, 91.6% Caucasian, 21.1±3.8 years). The average score from the “Provide Patient-Centered Care” domain was 7.7 (SD ± 1.65). The average scores were 7.4 (± 1.78) for the “Promote Population Health” and 8.4 (± 1.36) for the “Manage Pharmacy Systems” domains. The competency: “Ensure drug products are labeled appropriately” scored highest with an average of 9.0 (± 1.15). Implications: Irish student pharmacists rated a competency reflecting the dispensing function highest and competencies reflecting the public health aspects of practice the lowest. If the notion that students’ perceptions reflect the learned curriculum is tenable, these findings provide direction for curricular assessment and improvement as the contemporary practice paradigm continues to shift.

Pharmacy Residents’ Pursuit of Academic Positions. Tiffany R. Shin, The Ohio State University, Colleen A. Dula, The Ohio State University, Jennifer L. Rodis, The Ohio State University, Bella Mehta, The Ohio State University, Maria C. Pruchnicki, The Ohio State University. Objectives: Describe pharmacy residents’ interest in pursuing academic positions, evaluate training available during residency, and assess characteristics of the ideal position early in residency. Method: Study includes current pharmacy residents, and consists of an electronic survey disseminated via residency directors in October 2011. Residents who provide an email address will also be invited to participate in a May 2012 follow-up survey. Job preferences, characteristics of the ideal job, interest in academia, and teaching/research training were evaluated. The end-of-residency survey will focus on job selection, including applied/accepted positions, with specific questions regarding the pursuit of academic positions and characteristics of accepted positions. Results: 932 pharmacy residents participated (71.5% PGY-1, 26.3% PGY-2, 2.2% combined). 46.8% agreed they were seriously considering an academic position, 30.4% were neutral, and 22.9% disagreed. Formal training in teaching was available to 70.9% of residents, while 26.3% had formal programs in precepting and 16.1% in research. The top choices for post-residency positions were inpatient clinical (67%), academia (39%), and ambulatory care (31%). More PGY-2 residents (60.4%) than PGY-1 residents (31.1%) chose academia as a top two career option (p<0.001). Academia was more likely a top choice for ambulatory care (55.2%) and specialty inpatient residents (63%) than pharmacy practice (27.7%), managed care (19%), and administrative (33.3%) residents (p<0.05 for all comparisons). Top characteristics of the ideal job were collaboration with others (62.1%) and variety of daily activities (45.2%). Implications: Post-graduate trainees are ideal candidates for faculty recruitment, with many interested in academia. However, many residents likely need additional training for some responsibilities.

EXPERIENTIAL EDUCATION

Completed Research

A Comparison of Preceptor and APPE Student Interventions in a Medical Intensive Care Unit. Kathryn K. Neill, University of Arkansas for Medical Sciences, Ashley R. Stinnett, University of

Downloaded from http://www.ajpe.org by guest on July 24, 2021.
Arkansas for Medical Sciences, Kendrea M. Jones, University of Arkansas for Medical Sciences. Objectives: Participation in experiential education can support preceptors and practice sites through students’ contribution to the site’s goals and responsibilities. To investigate the integration of students into site responsibilities, interventions independently identified by students participating in an MICU APPE were compared to interventions documented by the preceptor to identify types of interventions that students perform with minimal supervision. Method: A panel of three ICU pharmacists developed a list and documentation form for pharmacy interventions. Students participating in a 4-week MICU APPE and the MICU preceptor documented their interventions and time spent during daily rounds in PxDx Case Logger™, an intervention tracking feature of E*Value. Students documented only those recommendations verified as appropriate by the preceptor. Recorded interventions for a three-month period were compared using descriptive statistics. Results: 139 student and 399 preceptor interventions were recorded. Average time documented on rounds was 3.2 hours (students) and 3.3 hours (preceptor). The top five interventions (#) documented for the preceptor were drug added (108), drug discontinued (103), dose adjustment (54), monitoring (46), and route change (42) compared with the top five student interventions [dose adjustment (42), route change (28), drug added (27), monitoring (17), drug discontinued (10)]. Implications: Documentation of student-identified interventions provides opportunity to examine possibilities for student responsibilities and may be used to focus the type and extent of training/orientation required to prepare students to perform these activities. Integrating students into site workflow may prove beneficial by augmenting staff time and resources.

A Quality Comparison Between Virtual Site Visits and On-site Visits of Required APPEs. Lisa M. Meny, Ferris State University, Cambria M. DeHoag, Ferris State University, Rosalie Baran, Ferris State University, Susan DeVuyst-Miller, Ferris State University, Jaqueline Morse, Ferris State University. Objectives: To compare the usefulness and preceptor satisfaction between a virtual site visit and a traditional in-person site visits. Method: The College of Pharmacy experiential team identified adjacent faculty practice sites which accept students on a regular basis for required APPEs. Sites where then randomized to undergo either a virtual site visit utilizing an online conferencing software or a traditional on-site visit. Both were conducted by experiential faculty members using a predefined visit template. Prior to the visit, sites were asked to complete a self-assessment checklist provided electronically. Following a completed site visit, preceptors were asked to complete and electronic post-visit survey checklist provided electronically. Following a completed site visit, faculty conducting the visits were asked to complete the visit assessment worksheet regardless of type of visits. Faculty spent, on average, more time with preceptors participating in an on-site visit (47 minutes) as compared with virtual site visits (36 minutes). Preceptor satisfaction was comparable between the two types of visits with preceptors feeling very positive overall about their site visit experience. Implications: Virtual site visits are an effective option for obtaining complete information on a quality assurance expectation checklist from adjacent faculty providing required APPEs.

An Evaluation of Pharmacy Students’ Attitudes and Motivations Towards Learning at an Accelerated Pharmacy Program. Paul Gavaza, Appalachian College of Pharmacy, Thomas R. Muthart, Appalachian College of Pharmacy. Objectives: Little is known about Doctor of Pharmacy students’ motivation to learn. This study was conducted to assess Appalachian College of Pharmacy (ACP) students’ attitudes towards learning and their motivation to learn. Method: A one-page survey was administered to first and second-year pharmacy students at the Appalachian College of Pharmacy. Survey questions focused on students’ goal-oriented motivation to learn, categorized into mastery-orientation, performance-orientation, and academic-alienation. A total of 16 survey items measured students’ motivation to learn using a Likert-type scale (1 = “Not true of me”, 7 = “Very true of me”). Results: Students at ACP were both mastery-oriented and performance-oriented learners. For example, students agreed with the following statements: “My aim is to completely master the material in my courses” (M = 6.2, SD = 0.9) and “I am striving to do well compared to other students” (M = 6.02, SD = 1.2). Students were not academic-alienation motivated learners. Overall, there was no statistically significant difference in mean motivation for learning between male and female students, younger and older students, or class standing (p >0.05). Implications: Pharmacy students are both mastery-oriented and performance-oriented learners and are not academic-alienation motivated learners. Mastery-oriented learners may make better pharmacy students as these types of learners tend to continue their education past graduation.

An Interprofessional Education Model Using Medical Residents and Pharmacy Students: The Effect on Diabetes Education. Dominick P. Trombetta, Wilkes University, Michael Gionfriddo, Wilkes University. Objectives: Interprofessional education (IPE) has become a novel approach to improving collaboration between health care providers. Improved patient outcomes can potentially be realized through greater collaboration between pharmacists and physicians. The impact of IPE on collaborative care is a very difficult metric to assess and evaluate. We evaluated patients’ understanding of their disease and medications under IPE collaborative care. The effect of an inter-professional collaborative care model between medical residents and pharmacists was investigated to determine if there are any changes in patients’ understanding of their disease and medications. Method: Initially patients underwent a brief medication history obtained by the pharmacy student, and were then educated on diabetes management. A plan of care was formulated through discussions between the attending physician, the resident, and the pharmacy student. The pharmacy student then educated and counseled the patient on the plan of care. Post-care surveys were given to all participants to gauge their satisfaction with the medication counseling provided. Overall, 22 surveys were collected. Due to the small sample size only descriptive analysis was possible. Results: Knowledge increased after counseling by the pharmacy student. Collaborative care fostered through IPE increased patients’ understanding of their diabetes care and medications. Implications: IPE during residency training may have a positive effect on the development of collaborative practices between physicians and pharmacists.

An Early Diabetes Risk Identification Initiative Involving Pharmacy Students. Nancy A. Letassy, The University of Oklahoma, Vincent C. Dennis, The University of Oklahoma, Donald L. Harrison, The University of Oklahoma, Ryan Webb, The University of Oklahoma. Objectives: To support health promotion and disease prevention among adults 18 to 40 in Oklahoma through determinations of health parameters associated with diabetes risk and provision of education during targeted screening events. Method: Screening events involved participants completion of a diabetes risk assessment survey, measurement of hemoglobin A1c, blood glucose, lipids, blood pressure and BMI. Pharmacy students completed research training prior to the events and had
primary roles of participant intake for health parameter determinations and initiation of the risk assessment survey following consent. Each participant met with a diabetes educator to review their results, diabetes risk factors, and receive education on lifestyle interventions to lower risk. Participants were encouraged to share the results with their providers and those with abnormal values were triaged according to acuity. **Results:** Seventy-five pharmacy students contributed to at least one of the 19 screening events held in 9 Oklahoma counties as a component of an introductory or advanced pharmacy practice experience. For the 964 participants screened 69% were female, the average age was 27.5 years, and 53.3% reported Caucasian race. For health parameters, 11.4% of hemoglobin A1c results met the criteria for pre-diabetes, 1.5% of results met the criteria for diabetes, and 59.3% of participants had a blood pressure value above the normal range. **Implications:** Pharmacy student involvement in a series of screening events provided essential support and contributed to skill development for this initiative identifying diabetes risk in a young adult population.

**Assessing Disaster Preparedness Triage Ability Using Different Simulation Methods.** Catherine A. White, The University of Georgia, Deanna W. McEwen, The University of Georgia. **Objectives:** To describe a Disaster Preparedness Introductory Pharmacy Practice Experience simulation and assess differences in simulation methods. This IPPE was developed for P(2) students to identify roles of pharmacists in Disaster Preparedness and to simulate the SALT (Sort, Assess, Life-Saving, Treatment/Transport) Triage Method using computer simulated and live victims. **Method:** P(2) students (140) learned the SALT method for mass casualty triage through a reading assignment and lecture which instructed students on the 4 triage categories: immediate, delayed, minimal or expectant. Students sorted 40 simulated computer victims and 6 of these computer victims were replicated with live victims (simulated injuries). In addition, students determined the transport order for immediate victims and watched a demonstration of personal protection equipment. **Results:** Students easily identified minimal victims but had the greatest difficulty distinguishing between immediate/expectant and immediate/delayed victims. Three computer simulated victims had compound fractures with severe bleeding. Two victims were classified as immediate by 69 and 74 students; however, when students were told they also needed to move the third victim to safety, 114 of them ranked this victim as immediate. Comparison of computer and live simulated victims yielded no consistent pattern in student response. **Implications:** Pharmacy students are provided with a valuable IPPE simulation that creates a sense of civic responsibility while exploring a non-traditional role of pharmacy. Analysis of student responses suggest that more background knowledge of survivable injuries should be incorporated into this IPPE. The use of both computer simulated and live victims are effective in teaching mass casualty triage.

**Assessing Knowledge, Skills, Attitudes and Values in Student Performance on Advanced Pharmacy Practice Experiences (APPEs).** Elizabeth P. Pitman, University of Houston, Elizabeth A. Coyle, University of Houston, Bernadette Asias, Central Texas Veterans Health Care System, Catherine L. Hatfield, University of Houston, Santhi Masilamani, University of Houston, Naney D. Ordonez, University of Houston, Kevin Garey, University of Houston. **Objectives:** AACP surveys preceptors annually using the Pharmacy Preceptor Survey. A more specific preceptor survey was developed at the University of Houston College of Pharmacy (UHCOP) to identify strengths and weaknesses in knowledge, skills, attitudes and values of P4 APPE students via questionnaire that can be mapped back to the current UHCOP PharmD curriculum. **Method:** A survey was developed by faculty members from the UHCOP in which preceptors rated on a Likert scale (1 to 5 or N/A) APPE students’ knowledge, skills, attitudes and values using specific questions related to achievement of terminal outcomes, activities and performance. Surveys were emailed to all preceptors of UHCOP APPE students during the timeframe of May 2009-April 2011. **Results:** 521 surveys were emailed and 220 preceptors responded (42%). Preceptors rated students’ knowledge strongest in the areas of cardiovascular and over-the-counter medication therapy and weakest in the areas of critical care and pharmacokinetics. Highest skills rates were found in the area of “comply with laws and related regulations” (83.3%) and weakest in “design and utilize drug related continuous quality improvement programs” (55.8%). Students’ attitudes and values were perceived strongest in “effectively works on a team” (89.8%) and weakest in “multitasks effectively” (63.6%). **Implications:** For experiential preparedness and curricular review, this survey will be instrumental in providing more defined feedback from preceptors guiding student improvement. This survey provides evidence and the ability to map specific strengths and weaknesses to areas within the curriculum. If successful, the survey will continue to be utilized as part of continuing quality improvement.

**Assessing Student Pharmacists Preparedness for a Global Health Advanced Pharmacy Practice Experience.** Monica L. Miller, Purdue University, Ellen M. Schellhase, Purdue University, Rakhi Karwa, Purdue University. **Objectives:** The Purdue Kenya Program is an elective global health Advance Pharmacy Practice Experience (APPE) offered in affiliation with AMPATH. Since establishing this APPE in 2003, the increased demand for participation has necessitated the development of a strategic process to evaluate the competency of interested students. Interested students are required to attend an orientation meeting, submit a written application and complete an interview. Selected students are then required to enroll in a two-credit preparation course. The intent of this initiative was to establish an assessment process to ensure that qualified students are prepared for the APPE. **Method:** A 30 question assessment was administered at the beginning and end of the course. Questions were created based on the course learning objectives. An 80% pass rate was required to participate in the APPE. Remediation was available for students who did not meet this criteria. **Results:** During spring 2011, 24 students were enrolled in the course. The average grade for the initial assessment was 55%. The average grade for the final assessment was 86%. Three students required remediation. There was a 68% improvement from initial to final assessment. All students were able to participate in the APPE. **Implications:** This innovation has provided a strategic way to assess student pharmacist readiness for this highly demanded APPE. In the future, the knowledge based assessment can be utilized at the end of the APPE to further understand the learning process and areas for improvement. This process could be replicated when preparing candidates for APPEs in other disciplines.

**Assessing Student Confidence in Influenza Vaccine Administration During an Introductory Pharmacy Practice Experience (IPPE).** Lindsey H. Welch, The University of Georgia, Linda D. Hughes, The University of Georgia, Dianne Williams, The University of Georgia, Deanna W. McEwen, The University of Georgia, Lori J. Duke, The University of Georgia. **Objectives:** To evaluate improvement in student confidence resulting from components of a required influenza vaccine administration IPPE including certification, simulation, and practical experience. **Method:** During Fall 2011, third year Pharm.D. students completed an IPPE including the APhA Pharmacy-Based Immunization Delivery Course, a three-hour simulation designed to reinforce skills and review the immunization process, and 12 hours
of practical experience. Student confidence was assessed through a survey administered at four time points: prior to certification, after certification, after a faculty-designed simulation, and after practical experience. The instrument used a four-point likert scale with 1 being “extremely unsure” and 4 being “extremely confident.” Students previously certified only completed the last three surveys. Results: Of 127 students completing the surveys, 12 had been certified one to two years prior to Fall 2011. Among students without prior training, the APhA certification course improved the majority’s confidence in vaccine administration from “extremely unsure” to “extremely confident” (mean scores of 1.58 before and 3.55 after certification). The simulation seemed most effective at increasing student confidence in documentation, legal, and emergency preparedness issues among the students certified in previous years. (mean scores pre and post simulation: Documentation (2.75 to 3.25), Legal (2.31 to 3.29), Adverse Reactions Management (2.75 to 3.42), Anaphylaxis Management (2.58 to 3.33)). Implications: Based on study results, the APhA certification course increases student confidence in vaccine administration; however reinforcement of documentation, legal, and emergency preparedness issues using a simulation is important, especially for those students who may have been certified at an earlier time.

Assessment of APPE Pharmacy Practice Skills With A Structured Case Format. Karen L. Kier, Ohio Northern University, Jennifer J. Kline, Ohio Northern University, Patricia A. Parteleno, Ohio Northern University, Jon E. Sprague, Ohio Northern University. Objectives: The purpose was to assess pharmacy practice skills using a structured case format and analyzing the skills with an assessment checklist and an AACU VALUE rubric. The objective was to gather information that would help in curricular development of pharmacy practice skills. Method: A practitioner team developed a complex therapeutic case that involved 9 distinct problems in addition to drug-induced issues, adherence issues, drug-drug interactions, and herbal products. A sample of the APPE students that was statistically similar to the entire class was studied. The sample was similar in gender and GPA. A checklist for identification of appropriate issues was developed and the A&CU VALUE rubric for Problem Solving was used. Results: 27 students participated. The team scored each paper using the checklist. All evaluators assessed each case together to assure consistency. Two evaluators had to agree on the VALUE rubric or a third evaluator was consulted. Majority Of students scored 2-3 (Milestone). Less than 10% scored at benchmark. Sixty percent were able to identify a drug-induced problem while only 37% identified nonadherence as an issue. Only 50% set goals according to national guidelines. Implications: The data was presented to the faculty. Strategies were suggested and put in place to incorporate more pharmacy practice issues into the curriculum. Emphasis is being placed on changing cases throughout the curriculum to include pharmacy practice issues such as drug-induced problems and nonadherence. A second assessment of the APPE students will take place in the spring semester as well as an initial assessment of capstone students.

Assessment of FERPA Knowledge and Instructional Needs Among Preceptors in Schools of Pharmacy in Alabama. Patricia B. Naro, Samford University, Lynn Stevenson, Auburn University, Peter J. Hughes, Samford University, Elizabeth S. McCullough, Samford University, April Staton, Auburn University, Kathy Kyle, Auburn University. Objectives: To evaluate preceptor knowledge of FERPA (Family Educational Rights and Privacy Act) regulations for schools of pharmacy in Alabama and assess the need for developing FERPA-related preceptor development modules. Method: Samford University McWhorter School of Pharmacy (MSOP) and Auburn University Harrison School of Pharmacy (HSOP) surveyed volunteer and full time faculty (n = 881) who precept students in their individual experiential programs. An 11 question survey was sent electronically to preceptors of the two institutions in January 2012. Anonymous demographic data were collected to determine faculty status and participation in training programs of other institutions. Results: Two hundred and forty-eight preceptors (28.1%) completed the survey. There were 141 preceptors that indicated that they precept for both MSOP and HSOP, with 58 indicating they are also preceptors for other schools of pharmacy. A majority (51.2%) reported precepting for more than 5 years. Eleven percent of respondents were full-time faculty for either MSOP or HSOP. Seventy-eight percent practice in either a hospital (n = 99) or community pharmacy (n = 94) setting. Only 28.6% indicated that they were familiar with FERPA and only 22.1% indicated they knew the acronym FERPA. Eighty-six percent indicated they need additional training on FERPA. Implications: The knowledge of FERPA is critical to protect the privacy of student information. Since the majority of experiential training in the Doctor of Pharmacy curriculum at affiliated institutions occurs through volunteer affiliate faculty, all preceptors should be knowledgeable and confident in their understanding of FERPA. Survey responses indicated a need for training and development on FERPA.

Assessment of Factors the Influence Student Preferences for Introductory and Advanced Pharmacy Practice Experiences. Mark A. Stephens, Union University, Sean R. King, Union University, Donna Randolph, Union University, Erica Rogers, Union University. Objectives: To assess student perception of factors potentially influencing their IPPE and APPE selections. Method: A questionnaire containing 16 factors that potentially influence student IPPE and APPE selection was pretested among selected fourth year pharmacy students and faculty. Pharmacy students in the first three professional years who recently made IPPE or APPE selections were administered the questionnaire (n = 157). A 5-point Likert-type scale where 1 equals strongly disagree and 5 equals strongly agree was used. Comparisons were made among the three classes at the a priori alpha level of 0.05. Results: Over seventy percent of each class chose driving distance as the most important factor in determining IPPE or APPE selection. Least important to each class was the number of prescriptions filled each day. Comparisons among the classes also revealed significant differences. The potential for future employment was more important to first-year students than to second and third-year students (mean = 4.30 vs. 3.69, 3.72, respectively). Dates of the experience were more important to first and second-year students than to third-year students (mean = 4.15, 4.44 vs. 3.53, respectively). Peer recommendations were more influential for second and third-year students compared to first year students (mean = 4.09, 4.28 vs. 3.56, respectively). Implications: Specific factors influence pharmacy student selection of IPPEs and APPEs. Factors differ between students completing IPPEs in the first two professional years and students completing APPEs beginning in the third professional year. Determining the factors that are most important to students may assist schools in identifying additional training sites that better meet student preferences.

Connecting the Dots: Bringing Community to Classroom to Prepare Pharmacy Students for Public Health Rotations. Craig A. Kovera, Touro College of Pharmacy-New York, Blakely Fountain, Touro College of Pharmacy-New York, Ronnie J. Moore, Touro College of Pharmacy-New York, Dipan B. Ray, Touro College of Pharmacy-New York. Objectives: Many communities today have growing health needs, calling for enhanced pharmacist services beyond individual patient care. Touro College of Pharmacy (TCP) in Harlem provides early experiential rotations in public health for
students to apply newly acquired knowledge and skills. This study assessed whether specific programming in a TCP Communities and Health Disparities (CHD) course would enhance student perceptions of preparedness in an introductory public health rotation (IPHR) as a first step to investigating the relationship between learning in the classroom and competence in addressing community health issues. **Method:** Community professionals were utilized for teaching in various CHD didactic sessions, while exposing students to local issues, research and interventions relating to health disparities. Students demonstrated their learning through a final project presentation involving a health disparity and associated research study or intervention by a particular community-based organization. Later, after students completed their IPHR, they answered questions about preparedness for that rotation, while preceptors completed performance evaluations that included open-ended comments. **Results:** Seventy-four students completed the survey. Seven of nineteen questions were directly related to different skills, knowledge, and understanding about the IPHR. Response averages ranged from 3.67 to 3.94 (1-5 scale), with median values of 4 for all seven questions, indicating endorsements centered on “Agree”. **Implications:** Student perceptions positively supported that bringing the community into the classroom helps prepare them for IPHR, though there was room for improvement. Future research will examine if additional classroom experiences increase the effect, and correlate student’s class performance with a new preceptor evaluation system for IPHRs.

**Correlations for Student Skill Assessment in APPEs.** Stanley S. Weber, University of Washington, Teresa O’Sullivan, University of Washington. **Objectives:** Measuring student learning and developing proxies for that learning is an important educational goal. Toward this end, we correlated student self-reports of global site learning, site quality, and effort required for learning with self-reports of the capacity of a site to improve students ability to care for patients. **Method:** Students are required at the end of each APPE to indicate the amount of effort put into that experience versus other experiences, the amount of learning accomplished in that experience compared to other experiences, the amount of improvement made in each ability-based outcome (ABO), and the global impression of the site (excellent, good, average, needs improvement). We used a Pearson’s correlation coefficient to determine whether learning measures correlated with ABO improvement, and whether amount of effort predicted amount of learning. **Results:** Results from 2,768 evaluations showed the amount of learning and evaluation of site were modestly correlated with improvement in patient care ABOS (r = 0.289, 0.315, respectively) with amount of effort even less correlated (r = 0.215). The amount of effort moderately predicted amount of learning (r = 0.638). When ACPE core experiences were examined separately, the global site evaluation was the best predictor of patient care skill improvement, particularly in the general medicine (r = 0.416) and clinic (r = 0.388) settings. **Implications:** Implications Amount of learning was not a strong predictor of improvement in patient care skills; the students’ impression of the site was marginally better at predicting improvement in patient care skills.

**Determining the Value of a Poison Prevention Program for First Year Pharmacy Students and Children.** Peter M. Brody, University at Buffalo, the State University of New York, Srijana D. Jonchhe, University at Buffalo, the State University of New York, Michelle A. Davis, University at Buffalo, the State University of New York, Kara A. Ziegler, University at Buffalo, the State University of New York. **Objectives:** To determine the effectiveness of the University at Buffalo School of Pharmacy’s poison prevention program in educating elementary school (ES) students about how poisonings occur and what to do in the event of a poisoning. A secondary objective was to assess the experience of the first year pharmacy students (P1), who were required to conduct the presentations. **Method:** Data for the ES and P1 students was collected for the 2010 and 2011 programs. The ES students, between ages 3-7, were asked to complete the pre-test within two weeks before their scheduled presentation. The same worksheet was completed for the post-test following their presentation. The P1’s were asked to complete a questionnaire assessing their experience within one month of the program’s conclusion. **Results:** The final analysis included 591 ES students. The mean score of the pre-test was 53.9% ± 18.8% (P < 0.0001) and the post test was 74.9% ± 19.9% (P <0.0001). Overall, 80.4% of the ES students improved their test score following the presentations. Additionally, of the P1’s who participated in the program and responded to the questionnaire, 84.6% reported that the program was a positive experience. **Implications:** The American Association of Poison Control Centers reports that approximately 50% of incoming calls are attributed to poisonings of children under six. With the knowledge conveyed to ES students through this program, it is anticipated that many poisonings may be prevented. These children will have increased awareness of potential household poisons and will be better prepared in the event of an accidental poisoning.

**Developing Student Confidence Through an Introductory Pharmacy Practice Experience.** Catherine Trimble, University of Missouri-Kansas City, Crystal D. Obering, University of Missouri-Kansas City. **Objectives:** To evaluate trends in students’ confidence gained in an IPPE rotation through a self-reflection survey to determine preparedness for APPE. **Method:** Students in their final year of didactic coursework entered into this IPPE. Clinical practice sites were utilized to aid in the delivery of the new concepts and allowed for progressive student engagement in clinical activities alongside faculty mentors. Over a period of 4 years, students were surveyed at baseline, midpoint, and final points using a nine question surveys rated on a likert scale (1 = strongly disagree to 4 = strongly agree). Questions were grouped into three categories: confidence in knowledge in developing and implementing care plans, confidence in working with other health care professionals, and confidence in working with patients. The review included 27 students and results were blinded. Descriptive statistics were applied. **Results:** Students appear to gain confidence in all areas throughout this IPPE. Students rated their level of confidence slightly lower with developing and implementing care plans at initial assessment (2.7 = disagree), and working with other health care providers (2.4 = disagree) as compared to their confidence in working with patients (2.9 = disagree). By the end of the experience, the student’s confidence in all areas improved, but notably confidence in working with other health care providers persisted as an area of lower student confidence. **Implications:** These results impact the focus of developmental areas the student encounters at the clinical site and serve as a gauge to focus the IPPE experience on a global level for development of clinical skills as they move into APPE.

**Development and Assessment of an Administrative Academic Pharmacy APPE Rotation.** Steven C. Stoner, University of Missouri-Kansas City, Valerie L. Ruehler, University of Missouri-Kansas City, Maqual R. Graham, University of Missouri-Kansas City. **Objectives:** Objectives/Intent: A 4-week, elective Administrative Academic Pharmacy (AAP) rotation was designed to provide students with insight into academia and participate in day-to-day operations of a School of Pharmacy. Participating students agreed to additional assessment methods to further enhance the development of the AAP. **Method:** Methods/Process: Students worked with a division chair,

experiential director, and associate professor while participating in the following activities: upper level administrative meetings; leadership development; school policy review; ACPE accreditation standards review; quality improvement projects; curricular design; and skills laboratory supervision and instruction. Effectiveness of the experience was assessed through the routine student evaluation process. In addition, AAP students were assessed for their teaching and instructional activities by students enrolled in the skills lab. Results: Results/Outcomes: Two students completed the initial offering of the AAP and participated in the activities designed to provide them with administrative, coordination, development, and teaching experiences. At the completion of the rotation, both AAP students highly recommended the rotation and the preceptors. The AAP student’s teaching effectiveness was measured by a survey of students enrolled in skills lab (n = 94). Students felt comfortable interacting with an AAP student (90%), believed knowledge was provided (93%), felt knowledge was applied (93%), and felt the AAP student enhanced the lab experience (88%). Implications: Implications: Through this AAP experience, students received the opportunity to gain early career exposure to academia and plan post-doctoral activities toward a career in pharmacy academia. Students benefit from the identification of areas for improvement prior to entry into post-doctoral training.

Development of a Partnership for International Rural Experiences. Emily K. Flores, East Tennessee State University. Objectives: To design a faculty-guided international elective Advanced Pharmacy Practice Experience (APPE) in partnership with a medical relief organization and to expose students to pharmacy-related opportunities in non-traditional settings focused on an indigent population, while obtaining a global perspective on healthcare. Method: The College of Pharmacy partnered with an international medical relief organization, Global Health Outreach, utilizing their resources for trip planning and in-country logistics to provide a framework for an APPE. Involved faculty members incorporate a short-term medical relief trip of 1-2 weeks into a full calendar month APPE. The balance of the APPE is faculty-guided discussion groups, involvement in formulary planning, developing educational materials, and providing local medical relief. Student course evaluations, exit interviews, and post-trip debriefing were used to evaluate the APPE experience. Results: Students participated in all aspects of the rural interprofessional medical clinic and gained knowledge and skills to be able to plan for and run a remote pharmacy. Students gained a global perspective through involvement in the practice of medicine in local as well as international rural locations and through interacting with patients in the clinic and home environment. Students had overall positive feedback when surveyed about their overall APPE experience as well as their experience in Nicaragua or Zambia. Implications: Students benefit from enhancing their cultural perspectives through international pharmacy experiences. Partnering with an international medical relief organization helps provide a framework for a faculty-guided international elective APPE.

Development of a Study Abroad Elective Course for Pharmacy Students. Sarah E. White, Pacific University Oregon. Objectives: The objectives of the study were to increase global health awareness and pharmacy student involvement in an international interprofessional study abroad program. Method: In order to include pharmacy students in this project an assessment was performed to determine the need for pharmacy student participation. A pharmacy practice faculty member attended the trip one year in advance of intending to take students and worked with the currently participating disciplines to evaluate the ways that pharmacy could contribute to this service learn-
organizations. Results: 1) Both organizations’ leadership (n = 10) exhibit high levels of “benevolent response” behavior on the Equity Sensitivity Instrument. 2) “Reciprocity” is an on-going concern as leaders worry that their organization gets too much out of the relationship. 3) Confidence in the other’s operational strength areas is expanding, leading to interest in connecting the partner with other service opportunities. Implications: These results support the equity-sensitivity literature and the role that perception of relational equity and parity plays in engendering cross-partner faith. These are factors, beyond more specific, self-referential ROI metrics, for colleges of pharmacy to consider as they seek global health partners to expand student access to such learning opportunities.

Effects of a Required Professionalism Class on Student Behavior in Advanced Pharmacy Practice Experiences (APPE). Amy D. Grant, South Carolina College of Pharmacy, Cathy L. Worrall, South Carolina College of Pharmacy. Objectives: To determine if a required class on expected professional behavior effects students’ behavior during their Advanced Pharmacy Practice Experiences (APPEs). Method: A survey was sent to APPE preceptors (May 2010) to assess their perceptions of students’ professional behavior on rotation. An interactive class addressing expected professional behavior and the consequences of unprofessional behavior was added to the P3 curriculum (Spring 2010). A follow-up survey was sent to APPE preceptors (May 2011) to reassess their perceptions of students’ professional behavior following the mandatory class. Results: 308 responses from the initial survey were received. 34% of preceptors reported incidences of unprofessional behavior. Top offenses included attendance/tardiness (55%), inappropriate use of electronic devices (42%), rotation priority (38%), and student performance (34%). 275 responses were received from the follow-up survey. 35% of preceptors reported incidences of unprofessional behavior following the mandatory professionalism class. Top offenses included attendance/tardiness (63%), rotation priority (42.5%), student performance (42.5%), inappropriate use of electronic devises (30.1%). Implications: Incorporating active learning targeted at expected professional behavior during APPEs may help reinforce this important component of the curriculum. Following the professionalism class, percentages of unprofessional behavior seemed to increase, yet a smaller number of student offenders were identified. The same categories of professionalism violations were present pre- and post-class. This may demonstrate a difference in generations or a heightened awareness of preceptors to these violations. Due to positive student feedback of the professionalism class, as well as continued professionalism violations of APPE students, the College will continue to offer the active learning professionalism class.

Electronic Student Portfolios in the APPE Curriculum-Compliance Rates and Interventions to Improve. C. Lea Bonner, Mercer University, Annesha W. Lovett, Mercer University, Susan W. Miller, Mercer University. Objectives: The purpose of this study is to (1) document the compliance rates of students in meeting portfolio submission deadlines and to (2) identify the number and types of interventions required by the Office of Experiential Education (OEE) in order for students to complete their P4 student e-portfolio assignments. Method: Student portfolios were examined during Weeks 1, 3 and 5 of each APPE for completed assignments. Non-compliant students were notified by the OEE by email of deficiencies, advised of the consequences of non-compliance and allowed 48 hours to bring their portfolio into compliance without penalty. Results: The first 6 months of 2011-12 academic year yielded 686 APPEs and 4,607 portfolio assignments; 11.6% were not completed by the due date; 534 electronic interventions and 10 grade reductions. Average student compliance rates were highest among mid-point self-assessments (94.8%) and evidence of learning artifacts (95%). All other portfolio artifacts had an average compliance rate of 85.6%-88.7%. Ninety-three students (71%) required minimal intervention (0-5); 29 (22.1%) required moderate intervention (6-10); 9 (6.9%) required excessive interventions (≥11). Implications: Compliance rates varied among assignments with automated notifications and those without. Providing automated student reminders doesn’t appear to be an important factor in compliance, rather the focus should be on promoting student awareness of portfolio requirements by the College and accrediting bodies. An increase in student buy-in should decrease the number of students requiring intervention by the OEE. Grades should also be linked to portfolios to decrease the number of students unwilling to comply.

Evaluation of Pharmacy Students’ Clinical Interventions on Advanced Pharmacy Practice Experiences at a Non-teaching Hospital. Angela O. Shogbom, Mercer University, Lisa M. Lundquist, Mercer University. Objectives: To evaluate clinical interventions of pharmacy students on advanced pharmacy practice experiences (APPE) at a community non-teaching hospital by assessment of clinical interventions for estimated cost savings, intervention class, and acceptance rate. Method: Clinical interventions of 69 fourth-year pharmacy students on Medication Safety (n = 13), Advanced Institutional (n = 17) and Internal Medicine (n = 39) APPE were collected from June 2009 to July 2011. Students documented daily clinical interventions on a data collection form. Interventions were classified into the following areas: therapeutic (antibiotic recommendations, medication initiation/discontinuation, therapeutic interchanges), safety (dose evaluations, lab evaluation, drug interactions, allergy clarification, medication order clarification), quality assurance (medication history, duplicate avoidance, inappropriate use of oral routes, and information/education (drug information, patient education). The data were entered into a pharmacy intervention database for analysis of estimated cost savings, intervention class, and acceptance rates. Results: A total of 1007 clinical interventions were attempted (126 from Medication Safety APPE, 141 Advanced Institutional, 740 Internal Medicine). Acceptance rate for all interventions was 96.5%. The total estimated cost savings was $119,401. Types and estimated cost savings of accepted interventions included: therapeutic (n = 117, $18,489), safety (n = 119, $18,207), quality assurance (n = 84, $12,852), intravenous to oral (n = 206, $3,451), and information/education (n = 446, $66,402). Internal medicine APPE students contributed to most of the therapeutic (96.1%), safety (94.9%) and quality assurance (96.6%) interventions. Implications: Pharmacy students on APPE at a community non-teaching hospital have multiple opportunities to participate in clinical activities, interact and collaborate with other healthcare professionals, and significantly impact patient care through clinical interventions, while also contributing to pharmacy cost savings.

Evaluation of a Pharmacy Recruitment Service Learning Project in Louisiana High Schools. Laurel L. Andrews, The University of Louisiana at Monroe, Connie L. Smith, The University of Louisiana at Monroe, Lesa W. Lawrence, The University of Louisiana at Monroe, Mary L. Caldwell, The University of Louisiana at Monroe. Objectives: The purpose of this study was to evaluate (1) satisfaction levels of high school educators present during recruitment presentations and (2) Louisiana high school students’ interest in the profession of pharmacy. Method: For a service learning project, second year pharmacy students gave recruitment presentations for the College of Pharmacy to Louisiana high school students. Pharmacy students chose the schools to which they presented and were given a PowerPoint presentation that the Office of Student and Professional Affairs (OSPA) uses as
a recruitment tool. A nine-question satisfaction survey, based on a 5-point Likert scale, was developed and given to a high school educator that attended each presentation. The presenters asked a set of five questions regarding the high school students’ interest in the profession of pharmacy before and after each presentation. Descriptive statistics were used to analyze results of the presentation evaluation, and paired t-tests were used to determine the impact of the presentation on students’ interest levels. IRB approval was obtained prior to beginning the project. Results: 43 pharmacy students presented at 13 schools to a total of 555 high school students. The mean educator satisfaction scores ranged from 4.95 – 5.0. Of the five pre- and post-presentation questions, numbers 1 and 4 demonstrated a statistically significant difference, p = 0.0078 and 0.0458 respectively. Implications: Results from the survey determined that educators were highly satisfied with the information delivered to their students, and the student presentations had a positive impact on high school students’ interest in pharmacy.

Evaluation of the Effects of Blinding Preceptors to Students’ Final Score During Pharmacy Practice Experiences. Connie L. Smith, The University of Louisiana at Monroe, Laurel L. Andrews, The University of Louisiana at Monroe, Gregory W. Smith, The University of Louisiana at Monroe. Objectives: Practice experience evaluation includes challenges such as grading variability between faculty and non-faculty preceptors and reluctance to assign an undesirable grade to students who do not meet expectations. The purpose of this project is to evaluate the effects of blinding preceptors to students’ final letter grades during pharmacy practice experiences. Method: Student evaluation scores were analyzed from May 2009 to January 2012, during which time preceptors used a standardized rubric. Prior to May 2011, preceptors were able to view the rubric-assigned final letter grade before submitting an evaluation. Beginning May 2011, preceptors were blinded to viewing the final letter grade. Descriptive statistics were used to report data. Results: 890 student assessments were analyzed. Respective changes of non-blinded vs. blinded grades among Community sites were A’s 94.5 to 73%, B’s 5.5 to 21%, C’s 0% to 6%; among Institutional sites were A’s 96 to 80%, B’s 3.3 to 20%; among Clinical Faculty sites were A’s 76.1 to 71%, B’s 19 to 24%, C’s 3.9 to 5%, F’s 1 to 0%; among Clinical Non-Faculty sites were A’s 91 to 76%, B’s 9 to 15%, C’s 0 to 80%, F’s 0 to 1%; and overall A’s 88 to 73%, B’s 10 to 21%, C’s 1.5 to 5%, F’s 0.5 to 1%. These findings seem to suggest that grade blinding results in a more consistent distribution between faculty and non-faculty scoring. Implications: Results from the study will be used to obtain insight into preceptor grading and provide guidance for further development of evaluation strategies.

Experiential Education Workforce and Workload Survey. Gina M. Baugh, West Virginia University, Lori Ernsthhausen, The University of Findlay, Elizabeth W. Young, The University of Utah. Objectives: (1) Develop a survey for experiential education (EE) directors to assess the current workforce and workload at schools of pharmacy (2) Evaluate data collected regarding workforce and faculty and staff expectations (3) Provide an opportunity for this data to be utilized by schools of pharmacy when reviewing their Office of EE expectations. Method: One goal of the AACP EE Section Strategic Plan was “to gather data regarding the make-up of experiential offices and their workload” by conducting a survey of EE directors. The 2009-10 Membership Committee of the EE section began developing the survey, and it was completed by the 2010-11 Committee. The survey was distributed electronically via Survey Monkey to the members of the EE Section with a request that one survey be completed per school. The data was reviewed by the Committee with preliminary results presented at the AACP EE Section business meeting. Results: Eighty-six surveys were completed with 69 schools self-reporting their participation. Survey results indicate that a majority of EE faculty hold a director title and a non-tenured (clinical) track appointment. A majority of EE faculty members reported additional teaching, service, and scholarship expectations despite holding a non-tenure appointment. Approximately 65% of schools reported belonging to an EE consortium, with preceptor education being reported as the major accomplishment. Implications: As EE is an increasingly demanding part of the pharmacy curriculum, this data will be useful for both new and established schools of pharmacy in reviewing their workload and faculty and staff expectations.

Extent of Introductory Pharmacy Practice Experience Application in Problem Based Learning Case Studies. Kristopher Harrell, The University of Mississippi, Melissa S. Kay, University of Mississippi Medical Center. Objectives: The purpose of this study was to examine the extent to which longitudinal (4 hour per week) introductory pharmacy practice experiences (IPPEs) influence classroom discussion during the third year curriculum and their applicability to problem-based learning (PBL) case studies. Method: All third year pharmacy students were asked to voluntarily complete a survey with respect to IPPEs and curriculum integration. Students rated the degree to which IPPEs were mentioned during PBL group sessions, their corresponding applicability to specific case topics covered, as well as the perceived benefits and barriers of IPPEs. Results were analyzed in aggregate and stratified based on IPPE rotation type (Community/Ambulatory Care and Institutional/Specialty). Results: 87 of 94 (93%) third year students responded. 93% reported that IPPEs were discussed during PBL group discussions. 94% of the students reported perceived benefits from practice experiences to date. Applicability to cases varied among students and by rotation type. Those who completed community/ambulatory care rotations reported most applicability with PUD/GERD and asthma cases (91% and 89%, respectively). Those who completed institutional/specialty rotations reported most applicability with sepsis/ fluid management and alcoholism/pancreatitis/tot al parenteral nutrition cases (93% and 82%, respectively). Least applicability was reported overall for cystic fibrosis and fibromyalgia cases (21% and 32%, respectively). A number of other benefits and suggestions for further integration were also provided. Implications: Results from this study reveal that students are discussing IPPEs during PBL case sessions. The extent of applicability is variable and dependent on rotation type; however, an overwhelming majority of students perceive benefits from IPPEs.

Faculty Perceptions of Standardized Assessment Tools for Advanced Pharmacy Practice Experiences. Valerie A. Coppenrath, Massachusetts College of Pharmacy and Health Sciences-Worcester, Abir Kanaan, Massachusetts College of Pharmacy and Health Sciences-Worcester, Courtney I. Jarvis, Massachusetts College of Pharmacy and Health Sciences-Worcester, Jayne LePage, Massachusetts College of Pharmacy and Health Sciences-Worcester, Cheryl Abel, Massachusetts College of Pharmacy and Health Sciences-Worcester, Michael Steinberg, Massachusetts College of Pharmacy and Health Sciences-Worcester, Alison Reznik, Massachusetts College of Pharmacy and Health Sciences-Worcester, Matthew R. Machado, Massachusetts College of Pharmacy and Health Sciences-Worcester, Catherine L. Simonian, Massachusetts College of Pharmacy and Health Sciences-Boston, Jennifer L. Donovan, Massachusetts College of Pharmacy and Health Sciences-Worcester. Objectives: Describe faculty perceptions of standardized evaluation tools to assess student performance and progression in achieving professional competencies during Advanced Pharmacy Practice Experiences (APPEs). Method: A task force comprised of faculty from the Departments of Pharmacy Practice and Experiential...
Impact of Learning Physical Assessment through Inter-Professional Collaboration: A Three Year Prospective Study. Maria Lourdes Ceballos-Coronel, Sullivan University. Objectives: This is a follow-up study to assess and determine any fluctuation in the impact of a redesigned delivery of the physical assessment course in an accelerated Pharm D program through inter-professional collaboration. Method: The 2 credit-hour course included an hour of didactic and three hours of practicum. Diverse health care professionals taught the practicum. A likert scale questionnaire was distributed at the start and end of the quarter. Questions pertained to the student’s opinion as to how inter-professional collaboration affected their learning. Survey data had been collected for 3 years from 2009 through 2011. Descriptive and inferential statistics (including mean, standard deviation and t-test) were performed to assess the study objectives. All relevant analyses were performed at a significance level of 0.05. Results: Pre and post survey questionnaires were compared for any changes in the impact of the delivery utilizing different health care professionals. The results revealed that the students learned the most from the MD and the PharmD. The students felt competent performing their skills and strongly felt that the acquired skills rendered a competitive edge to their profession. They also felt continued in inter-professional collaboration would be beneficial. Implications: The rapidly evolving pharmacy practice requires most pharmacists to be confident and knowledgeable as they conduct a complete and accurate patient evaluation. Due to their expanding role as collaborative practitioners, patient educators, drug therapy managers and pharmaceutical care provider, Pharmacists can improve quality care by developing a cohesive partnership with the medical team and the patient.

Impact of a Community Engagement APPE on Students’ Confidence and Ability. Ann M. Ryan-Haddad, Creighton University, Kelli L. Coover, Creighton University, Kimberley J. Begley, Creighton University, Jennifer A. Tilleman, Creighton University. Objectives: To assess changes in students’ self-reported confidence levels related to clinical skills, abilities, and attitudes in patient care on a community engagement APPE. Method: Students enrolled in a 5–week elective community engagement APPE. The APPE learning objectives were developed based on CAPE outcomes as well as the educational outcomes for the pharmacy program. Rotation activities include: medication review and reconciliation, patient counseling and development of medication action plans, interprofessional team meetings, health screenings, health education and promotion activities. Students (n = 42) are required to complete a 10-item pre- and post- survey. The survey was developed by the faculty preceptor based upon the APPE objectives. It is as an assessment of each student’s perception of their competence and confidence in skills necessary for providing pharmacy services to patients in nontraditional community-based programs. Each statement was measured in a 5 point Likert scale. Results: The survey data indicates a statistically significant increase in student’s perceptions of their competence and confidence in skills necessary for providing pharmacy services to patients in nontraditional community-based programs. Statistical significance was noted for all survey items. The greatest change was noted in pre/post scores for students’ perceived confidence in formulating appropriate care plans for patients in community-based outreach programs and their capability in delivering educational programs to the community. Implications: This APPE provides students opportunities in nontraditional community settings to gain confidence and enhance skills essential in the practice of pharmacy for health promotion, medication management, and interprofessional care of patients.

Implementation of an IPPE Service Learning Project on a Multi-Campus College of Pharmacy. Amy D. Grant, South Carolina College of Pharmacy, Jill E. Michels, South Carolina College of Pharmacy, Christina L. DeRienzo, South Carolina College of Pharmacy. Objectives: To implement a service learning project as an IPPE component on a multi-campus college of pharmacy that allows pharmacy students, regardless of geographic location, to participate in the same active learning activity. Method: During their first IPPE, South Carolina College of Pharmacy Class of 2015 P1 students completed an educational program developed by the Palmetto Poison Center for...
Influence of Pharmacy Student Internships on Student Learning

Kari L. Franson,
University of Colorado

Influence of Pharmacy Student Internships on Student Learning, and how students view their internship experiences and what they learned in school only for ‘giving immunizations’. Nearly 80% of all students found their supervisors to be competent and concerned about the students’ learning and development.

Implications: These results indicate the pharmacy functions that students are and are not exposed to during their internships. This information provides our school with an opportunity to focus on the activities with low exposure, and perhaps allow students to “test out of” activities with high exposure. We will also seek to align performance expectations between the work and school environment.

Interdisciplinary Opinions Regarding Interprofessional Education in Faculty and Their Students.

method: A 5-point Likert-type survey to measure opinions of IPE was developed and administered to faculty and students in the Osteopathic Medicine (COM), Pharmacy (COP), and Physician Assistant (PA) programs at Touro University-California. A total of 426 (41.9%) student and 62 (60.1%) faculty surveys were completed and included in the analysis. Participation rates were relatively similar. Results: Overall, COP and PA faculty held the most favorable opinions of IPE, followed by COP and PA students. While still generally “positive”, COM faculty and students tended to have significantly lower opinions regarding IPE relative to previously mentioned cohorts. While students in the three disciplines reported similar positive opinions on specific questions related to patient care (e.g., “IPE improves efficiency in patient care”, “IPE promotes team-based learning” and “IPE can help resolve conflict resolution”), COM faculty and students were significantly less interested in increasing IPE opportunities and rated its relative importance lower when compared to their COP and PA colleagues. Implications: While limitations within self-reported surveys exist, these results suggest that students and faculty in the College of Medicine may hold lower opinions regarding IPE relative to other health professional faculty and students. As physicians are the leaders of the health-care team, their endorsement of IPE is key for IPE’s successful integration into curriculum. It is unknown how these attitudes develop and whether enhancing IPE opportunities would positively impact future opinions regarding the importance of interprofessional education.

International, Collaborative, Preceptor Training between the University of Nizwa and the University of Wisconsin.

Mara A. Kieser,
University of Wisconsin-Madison

Influence of Pharmacy Student Internships on Student Learning and Attitudes in School.

Kari L. Franson,
University of Colorado

Kristin J. Braschler,
University of Colorado, Caleb Y. Oh, University of Colorado. Objectives: To determine how pharmacy internships influence student learning, and how students view their internship settings as teaching environments. Method: Fall 2011 survey to P1-P3 students. Survey sections included demographics, current work setting and hours, listing of 25 pharmacy functions/tasks/skills performed (e.g. give immunizations, provide dietary counseling, answer drug information questions), opinion about work influence on school learning, and perception of students’ supervisors as teachers. Results: 420 of 480 students completed the survey. 30% of students entered the program without prior pharmacy experience. 50% of reported P1s currently had an internship, as did 62% P2s, and 75% P3s. 57% P1s, 68% P2s and 52% P3s worked retail. 50% of P1s never performed 22 of the 25 pharmacy functions, but of the P3s, 50% never performed 10 of 25. Students were least likely to be exposed to functions associated with ‘sterile compounding’, ‘evaluation of new patients’, and ‘MTM services’. 90% of P2 and P3 students reported concordance between their performance at work and what they learned in school only for ‘giving immunizations’. Nearly 80% of all students found their supervisors to be competent and concerned about the students’ learning and development.

Implications: These results indicate the pharmacy functions that students are and are not exposed to during their internships. This information provides our school with an opportunity to focus on the activities with low exposure, and perhaps allow students to “test out of” activities with high exposure. We will also seek to align performance expectations between the work and school environment.

Implementing a New Experiential Model - Cooperative Learning: A Four Year Success Story.

Nancy Waite, University of Waterloo, Anson Tang, School of Pharmacy, University of Waterloo, Heather Chase, Rick Roach, CECS, University of Waterloo, Eric F. Schneider, University of Waterloo. Objectives: The School of Pharmacy (SOP), University of Waterloo (UW), took advantage of a blank slate to investigate, design, market, implement and monitor a form of experiential education uncommon in health care professional programs – co-operative education (co-op). Method: Co-op is based on the principle that an academic program combined with work experience is relevant and desirable for effective professional preparation. At the SOP, students complete 4 four month work terms in diverse settings. They must apply for, interview and be hired by employers who advertise their pre-approved paid jobs. Results: Establishment of this experiential model occurred during economic downturn when provincial health care reform negatively impacted pharmacy opportunities and another pharmacy program was paying employers to train students. A unique marketing strategy capitalized on meeting employers’ project and professional needs and has led to 4 years of success. The SOP has over 800 employer organizations from which to provide student workterms and feedback on our curriculum. An average 1.2 jobs/student/workterm is one of the highest rates at UW, the world’s largest co-op university. Students have completed over 1500 placements with little reliance on metropolitan positions (only 27%). On average, workterms are 50% community, 25% hospital with the remainder in government, long-term and ambulatory care, and pharmaceutical and insurance industry. The first graduating class had 95.5% of students with one industry. The first graduating class had 95.5% of students with one.
Oman preceptor readiness before and after attending preceptor training programs. **Method:** The University of Nizwa (UN) is the first non-profit university in Oman. UN student pharmacists complete didactic coursework, six practicum experiences, and two internship experiences. The UN requested assistance from the University of Wisconsin (UW) to provide preceptor training for pharmacists supervising students during practicums. UW faculty created a three-hour training program using active learning techniques that focused on setting expectations, motivation, providing effective feedback, and role modeling. Program format included presentations, role playing, videos, and small group discussions. UN faculty also described practicum activities, requirements, and answered questions. Participating pharmacists self-assessed their precepting skills using an assessment survey before and after the training. The survey listed ten precepting statements in which pharmacists agreed or disagreed using a Likert scale, with strongly disagree as 1 and strongly agree as 4. Pharmacists completed a program evaluation and provided written comments. Assessment scores were compared between the two groups using Wilcoxon signed-rank test. **Results:** A total of 13 preceptor trainings were provided in 2010-2011 in six Omani cities. A total of 249 preceptors attended and were receptive to participation. Preceptors reported improved confidence in motivating students, evaluating student performance, and providing negative feedback. Despite discussion on time management, participants did not report improved confidence in having time to precept students. **Implications:** While pharmacy practice differs in Oman from the US, collaborative preceptor training sessions are beneficial to pharmacists training students. This experience has led to other collaborations.

**Interprofessional Education in Nursing Home Health Care Teams.** Christine M. Ruby, University of Pittsburgh, Linda Organist, University of Pittsburgh School of Nursing, David Nace, University of Pittsburgh School of Medicine, Allen Humphrey, University of Pittsburgh School of Medicine, Eileen Chasens, University of Pittsburgh School of Nursing, Jules Rosen, University of Pittsburgh School of Medicine, LalithKumar K. Solai, University of Pittsburgh School of Medicine, Keith R. Stowell, University of Pittsburgh School of Medicine, Susan M. Meyer, University of Pittsburgh School of Medicine, Steven L. Kanter, University of Pittsburgh School of Medicine, Brenda L. Kanter, University of Pittsburgh School of Medicine, Susan M. Meyer, University of Pittsburgh. **Objectives:** Deliver a four-week interprofessional (IP) rotation providing advanced clinical education to a team of medical, nursing, and pharmacy students in a nursing home setting. **Method:** Faculty from the participating professions met over nine months to develop the core curriculum. Administrators and staff from the nursing home were engaged in the curriculum. Students also performed well during the standardized assessment with 58.1% (n = 35) achieving improvement in students’ self-efficacy to perform medication histories. Plans to extend the rotation to other facilities within the health system network.

**Introductory Pharmacy Practice Experience Emphasizing Medication Reconciliation at the University of Arizona College of Pharmacy.** Janet H. Cooley, The University of Arizona, Jenene Spencer, The University of Arizona, Kurt Weibel, The University of Arizona Medical Center. **Objectives:** To describe an institutional introductory pharmacy practice experience (IPPE) with an emphasis in medication reconciliation. **Method:** Second and third year pharmacy students were scheduled to perform medication reconciliation activities at the University of Arizona Medical Center four hours per week for fifteen weeks. To ensure continuity of medication reconciliation activities, five groups of three students were each assigned to one weekly. Each student in the group was assigned to a different area of the hospital to perform medication reconciliation activities for patients within forty-eight hours of admission. Paid interns performed these activities on the weekends and holidays. Additionally, each student shadowed a clinical pharmacist for forty hours for traditional IPPE activities. **Results:** Students reported, via evaluations, that the experience was beneficial and that hospital staff was helpful and responsive. Most students reported that they preferred the forty hours spent with their assigned pharmacist. While several students stated that they could have accomplished the medication reconciliation activities in fewer than four hours per week, the primary preceptor reported that the students were expected to spend extra time reviewing patient information and researching medication information. **Implications:** This is a unique opportunity for an institutional IPPE and is of value to the hospital. It will continue to be assessed and improved using feedback from students, pharmacists, and hospital staff. The addition of discharge medication reconciliation activities are being considered, not only to enhance the students’ experience but also to meet a need of the hospital. Other experiential education programs could benefit from this type of IPPE.

**Medication Mysteries Infinite Case Tool: A Situated-Learning Experience.** Karen R. Sando, University of Florida, Jennifer Elliott, University of Florida, Melonie Stanton, University of Florida, Randall E. Doty, University of Florida. **Objectives:** To describe use of a situated-learning tool to prepare 2nd year pharmacy students to conduct medication history interviews in preparation for clinical introductory pharmacy practice experiences (IPPE). **Method:** Students completed 1.5 hours of preparation which included 2 lecture videos on medication history taking and medication reconciliation. Students were then assigned to a 2 hour group laboratory session to allow them to practice conducting medication histories. The Medication Mysteries Infinite Case Tool was designed to produce random patients using game-like features to allow the students to practice with multiple scenarios. Student peer feedback during the laboratory session was used to help with skill improvement during the experience. A final assessment using standardized cases was used to assure students achieved learning outcomes. Students’ pre- and post-surveys, preceptor surveys, and student assessment data were used to determine if the experience was valuable. **Results:** Seventeen out of 93 (18.2%) students responded to the survey. Student scores on 17 pre-and post-activity questions were compared using Wilcoxon signed-rank test. Differences were considered statistically significant if p was less than 0.05. Significant differences were found between all 17 pre- and post-activity questions indicating improvement in students’ self-efficacy to perform medication histories. Students also performed well during the standardized assessment with 58.1% (n = 54) achieving excellence and 37.6% (n = 35) achieving competence. Preceptor feedback was also positive. **Implications:** Using
the Medication Mysteries Infinite Case Tool provided a mechanism that increased confidence and ability in students conducting medication histories prior to their clinical IPPE experiences.

**Novel APPE experiential Learning Opportunity in Pharmacy Education: Research in Environmental Toxicology and Cardiovascular Physiology.** Wasana K. Sumanasekera, Sullivan University, Hieu T. Tran, Sullivan University, Misty M. Stutz, Sullivan University, Gregg Rokosh, University of Louisville. Objectives: Major objective of the presented study is to design and implement a unique hands-on laboratory research based elective APPE rotation in cigarette smoke toxicology. **Method:** A novel APPE experiential learning approach has been launched after extensive literature search to ensure the uniqueness. Adverse effects of cigarette smoking on cardiovascular functions have been explored using cardiac stem cell model. APPE Students were exposed to various hands on laboratory techniques in cardiovascular physiology and Cell and Molecular Biology. In particular, students received the opportunity to learn several experimental methods including sterile techniques, cardiac stem cell culture, toxicology assays, cell based assays, and advanced molecular techniques such as gel electrophoresis and western blotting. In addition, students were given the opportunity to learn how to design hypothesis driven scientific experiments and critically analyze original research based scientific literature. Students also participated in data recording and scientific writing. Students were assessed on variety of criteria including professionalism, laboratory technical skills, organization, presentation, critical thinking, literature search, and scientific writing skills. **Results:** Four APPE rotations have been conducted. Based on a survey, 100% of students either agreed or strongly agreed on the structure of the program. Findings based on this approach have been accepted to present in scientific meetings. Program design, outcomes, student survey results, research techniques, assessments, and research data will be presented. **Implications:** Develop technical, analytical and critical thinking skills that are required to thrive as a future pharmacist. Promote opportunities for professional growth. Facilitate research competence in students leading to improved future patient care.

**Nursing Home Administrators’ Perspectives on the GRACE Program: an Introductory Pharmacy Practice Experience.** Cynthia Stanley, University of the Incarnate Word, Jeffrey T. Copeland, University of the Incarnate Word, David F. Maize, University of the Incarnate Word. Objectives: The GRACE (Growing Respect and Care for the Elderly) Program was designed for pairs of P3 students to visit nursing home residents over a six-week period to review resident’s chart, evaluate and identify drug therapy issues, and interact with consultant pharmacists and staff at two nursing homes. The first objective was to evaluate the resident’s drug therapy. Given that this was the first implementation of the program, the second objective was to evaluate nursing home administrators’ perspective of the program. **Method:** Administrators (n=10) completed an anonymous, 14-question paper survey. The response rate was 80%. Statistics were calculated by SPSS. **Results:** The administrators reported that both their facility and residents received a great benefit from the students’ involvement (4.38 and 4.62 out of 5, respectively). Importantly, the facilities interest to work with pharmacy students significantly increased (p<0.03) over the six-week period. Further, administrators indicated that the GRACE program was an excellent experience for pharmacy students (4.62 out of 5), noting a significant increase in their ability to review charts, make recommendations to a physician with the help of a consultant pharmacist, and interact with residents (p<0.007, p<0.021 and p<0.048, respectively.) **Implications:** Administrators of the nursing homes involved in the GRACE program indicated overwhelmingly that pharmacy students provided value-added services by assisting the facility in identifying and addressing drug therapy concerns, thereby improving their residents’ drug therapy management. An additional benefit of this program was the opportunity for students to experience both field and clinical practice with a geriatric population.

**Optimizing Community Practice Experiences through Medication Therapy Management, A Pilot Study.** Adlia Ebeid, Texas Southern University, Joy Hernandez, Michelle King, Birdie Kelley. Objectives: To optimize the community Introductory Pharmacy Practice Experience (IPPE) at Texas Southern University College of Pharmacy by implementing a Medication Therapy Management (MTM) experience at Walgreens Pharmacies for second year PharmD students. **Method:** For the community IPPE requirement, 15 Walgreens preceptors were identified and matched to 15 IPPE students based on store location and student zip code. Upon completing orientation, students spent two weeks at their assigned site conducting targeted MTM interventions, prescriber consultations, patient consultations, patient education and monitoring. **Results:** A total of 107 MTM cases were completed utilizing a nation-wide MTM administrator. The students conducted 45 telephone consultations and 1 face-to-face consultation with 35 different patients. Medication underuse was identified as the major indication for service with 31 interventions; other indications included 8 cost efficacy, 4 new or changed medication, and I need for therapy. **Implications:** MTM is a service provided by pharmacists that helps patients attain optimal results from their medication. Community pharmacies identified MTM programs to be an effective and necessary means to direct patient care. MTM program participation by second year PharmD students increases their exposure to MTM practices, direct patient care, and optimizing medication regimens. This supplements their didactic coursework, builds confidence, and prepares students for advanced experiences, and post-graduate opportunities while realizing the benefit of having an IPPE student.

**Paramedic-Ride-A-Long A Novel IPPE Experience.** Paul Oesterman, Roseman University of Health Sciences. Objectives: Pharmacy students gain IPPE experience in traditional community and institutional settings. To increase interdisciplinary exposure and understanding of healthcare across the continuum of patient care, students completed a single 8-12 hour paramedic Ride-A-Long to learn how patients enter the healthcare system, understand the roles and responsibilities of paramedics, the medications they administer, and observe the interaction between members of the health care team. **Method:** Instead of one community rotation, students were scheduled for a Ride-A-Long with a paramedic and EMT. They were required to discuss the medications used in the field, monitoring parameters, and assist with patient assessment. Each student participated in a minimum of 4 emergency calls. During the Ride-A-Long, each student completed an assignment pertaining to medication use in the field. Following the Ride-A-Long students were required to submit the assignment and a reflection on their experience. **Results:** More than 95% of the students found the experience to be valuable. The appreciated the opportunity to assist with patient assessment, taking vital signs and even performing CPR. The reflections were eye-opening and most gained an appreciation for what paramedics do and their degree of professionalism and knowledge. The paramedics felt this was valuable for them as they learned from the pharmacy students. **Implications:** While most students will not be practicing in the field, the experience is one that provided a memorable experience the students will not soon forget. Due to the overwhelming positive response, this is a rotation that will be included for all future classes.
Professional Communication Enhanced with Implementation of a Six Week Ambulatory Care APPE Course. Christopher M. Miller, University of Kentucky, Anne Policastro, University of Kentucky, Michael C. Berger, University of Kentucky. Objectives: An adequate supply of ambulatory care sites is critical to maintain student enrollment in the UK Clinical Education Center program based in Louisville, KY. In conjunction with the recent implementation of a six week rotation model, new courses and syllabi were created. The new ambulatory care course prescribes changes in the APPE requirements, especially presentations. The purpose of this project was to facilitate changes in our sites’ requirements to enhance the student’s communication skills during their ambulatory care APPE. Method: The launch of this new course demanded a strategy to implement changes without losing critical sites. During faculty site visits, preceptors were educated on the specific competency requirements of the course. They were encouraged to implement the prescribed competencies, including the following presentations: a patient case, journal club review, and presentation to a defined health care group. All sites expressed their agreement to implement the course requirements. Results: All of our sites, including those at academic medical centers, were not requiring all these professional presentations prior to implementation of this new APPE course. A recent review of each student’s electronic portfolio revealed that they are completing their ambulatory care presentation requirements with rare exceptions. We learned that we still have minor issues that need clarification concerning expected requirements for these presentations; however, significant progress is being recognized. Implications: The ambulatory APPE experience is providing our students with significant professional communication experience. They are demonstrating improvement in literature evaluation skills, and with the design and delivery of presentations.

Programmatic Assessment of Reflective Learning in an Introductory Pharmacy Practice Experience Course. KarenBeth H. Bohan, Wilkes University, Jennifer Malinowski, Wilkes University. Objectives: The self-directed introductory pharmacy practice experience (SD-IPPE) is a new longitudinal, community service experience for P1, P2 and P3 students. The purpose of this activity was to evaluate student’s final reflections using predefined course objectives to determine whether involvement in the IPPE activity influenced the student’s personal and professional development. Since feedback is an important component of reflective learning, faculty advisors are to provide comments and it is hoped that this enhances the mentoring relationship. Method: Student reflections in each pharmacy class were randomly selected using an ePortfolio. A rubric was applied to determine if the student met learning objectives for the course based on the written reflection. The degree of faculty participation and provision of feedback was assessed by surveying every student’s portfolio. Results: While the majority of students met most learning objectives, less than 20% of all students discussed enhancement of mentoring relationships in their reflection. Faculty advisors validated student reflections in the ePortfolio, but valuable feedback was provided in only 25% of reflections reviewed. Implications: As a result of this evaluation, we altered our guided reflection rubric to better elucidate mentoring relationships in the reflection for the Spring 2012 semester. Faculty surveys on perceived barriers to offering timely, constructive feedback were evaluated to enhance the program. To close the loop, re-assessment will take place with this spring’s final reflections.

Quantity and Impact of Scholarly Works Published by Experiential Education Faculty in the United States. Sara R. McElroy, University of Washington, Jennifer Danielson, University of Washington. Objectives: As experiential education (EE) in pharmacy curricula grew over the past 10 years, roles of faculty working in this area evolved. As such, EE faculty play an increasingly important role in disseminating scholarly work. Consequently, the amount of published works in this specialty is growing. The purpose of this project was to determine the quantity and impact of scholarly works published by EE faculty members at US schools/colleges of pharmacy during 2001-2011. Method: Published works and corresponding citations were identified using Web of Science database. EE faculty members were identified from the 2011 AACP Membership Roster. Results: Of 227 EE faculty identified, 91 individuals (40%) produced a total of 327 publications between 2001 and 2011. Of these authors, 31 (34%) published only once, 32 (35%) had 2 to 3 publications, 10 (11%) had 4 to 5 publications, and 18 (20%) had 6 or more publications. Seventy-six percent of publications were listed as articles, while relatively few were listed as abstracts, proceedings, and reviews. AJPE was the most common journal (32.1%), followed by Annals of Pharmacotherapy (8.9%), AJHP (8.6%) and JAPhA (7.0%). The 327 publications were cited a total of 1565 times, with a majority of citations occurring between 2007 and 2011 (70%). Implications: A significant number of EE faculty members have contributed to the pharmacy education and biomedical literature over the past ten years. The number and impact of such works is expected to grow as these individuals continue to develop their roles as scholars of experiential education.

Resource Fund Carve-Out Strategy to Provide Preceptor Training and Site Development for Dedicated APPE Sites. Tonya Dauterman, The University of Findlay, Lori Ernsthausen, The University of Findlay. Objectives: The primary objective is to assure that advanced pharmacy practice preceptors have the resources necessary to support student learning. Resources are defined as drug information, technology, professional development, continuing education, or other. Method: UF students are placed in a unique advanced pharmacy practice experience model, whereby students are assigned to a “hub site” through which they may complete all required and elective rotations. Each site has a clinical faculty representative at the site. These sites are contracted annually to provide a majority of the student’s core rotations. In each contract, a defined minimum amount of dollars are carved out of the site’s total payment. Sites must request approval from the college prior to release of any carve out funds for the purpose of site development for student learning (computers, books, etc.) and/or preceptor training and certification. The program was implemented in 2010. Results: From July 2010 through February 2012, eighty eight requests from 22 sites have been funded through carve out dollars. Total dollars spent toward the resource fund were $100,289.19. Requests were made in the areas of technology, professional education and development, and drug information. Implications: Since the implementation of the carve out fund, the college has been able to provide substantial support to its most vital sites as a means to improve technology, the availability of drug information resources and preceptor education and development.

Student Reflections Regarding Introductory Shadow Visit Experiences. Rhonda M. Jones, Creighton University, Kelli L. Cooper, Creighton University, Maryann Z. Skrabal, Creighton University, Kelly Anderson, Creighton University, Teri Miller, Creighton University. Objectives: Objectives: Creighton’s pharmacy program implemented a new curriculum in fall 2010, with introductory (IPPE) and advanced (APPE) experiences encompassing 30% of the curriculum. The purpose of this study is to assess IPPE I student learning outcomes through preceptor assessments and student reflections. Method: Methods: IPPE I learning outcomes and activities were developed by experiential faculty and external practitioners with expertise in the corresponding practice setting. IPPE I included four, four-hour
Student and Older Adult Relationship (SOAR) Project as an Introductory Pharmacy Practice Experience (IPPE) Opportunity. Jenene Spencer, The University of Arizona, Janet Cooley, The University of Arizona. Objectives: To describe a supplemental component of the IPPE program for first year students that focuses on communication and interactions with older adults. Method: First-year pharmacy students were placed into pairs and met weekly with two residents at a long-term care (LTC) facility over nine weeks. A faculty mentor oversaw activities at the facility. Students completed health and medication histories and performed assessments for health literacy, mental status, nutrition, and depression. Students presented their residents with updated medication lists and drug/disease educational information. Students also conducted life interviews and presented residents with a memento of their conversations (e.g. scrapbooks, shadow boxes, picture frames, thank you cards). The program was assessed using class evaluations. Results: The residents informally reported to LTC facility staff that they were highly satisfied with their program experiences. Eighty percent of the students reported, via class evaluations, visiting the long-term care residents as their favorite part of the course and indicated the program allowed them to improve communication skills, develop relationships, and provide companionship to the residents. Additionally, the medication list and drug/disease educational information assignments were perceived to be beneficial. Implications: Although successful the first two years, the SOAR project will continue to be assessed using feedback from students, residents, and LTC facility staff. The SOAR project provides a unique IPPE opportunity in addition to the standard experiences in community and institutional pharmacy settings. This type of program could add value to other IPPE programs that have opportunities to partner with LTC facilities.

Student and Patient Perceptions of the Family and Friends Project in an IPPE Program. Angela M. Hill, University of South Florida, Soheyla Mahdavian, Florida A&M University, Patty Ghazvini, Florida A&M University, Angela C. Singh, Florida A&M University. Objectives: The Patient Counseling Skills Course at Florida A&M University College of Pharmacy utilizes the Family and Friends project to serve as a component of the IPPE program. Student pharmacists are allowed to identify appropriate family or friends to provide medication-related education and interventions over the course of one semester. The activities include, but are not limited to assessing the use of prescription and nonprescription medications; identifying side effects, drug interactions, adherence patterns, cost considerations, and resource needs; and educating patients on issues related to medication disposal and administration techniques. The objective of this study is to analyze the perceived value of the project from the patients’ and students’ views. Method: The students and patients involved in the project were given surveys to provide feedback on the value of the project to faculty involved in the course. Results: Ninety-five percent of the patients (n = 102) felt that the Family and Friends project is a valuable tool for student pharmacists to practice counseling skills, and that the student pharmacists were more confident about discussing medications by the end of the semester. Ninety-one percent (n = 98) of the patients agreed that continuity of care could be provided to patients if the project was implemented annually. Similarly, 88% (n = 104) of the student pharmacists felt more comfortable counseling their patients by the end of the semester, with 95% reported that they learned “some information” through the project. Implications: The Family and Friends project can be a valuable tool for strengthening communication skills in student pharmacists.

Student and Preceptor Faculty Feedback on a Concentrated Institutional IPPE. Donna M. Burkett, The University of Texas at Austin, Jennifer L. Ridings-Myhra, The University of Texas at Austin, William J. McIntyre, The University of Texas at Austin. Objectives: To collect, evaluate and analyze student and preceptor faculty feedback on the initial offering of the two week institutional IPPE. Method: Students participating in the institutional IPPE during the summer of 2011 were surveyed via course evaluations, reflections, online survey, and a focus group. Preceptor faculty were surveyed by conference calls. Results: Approximately 125 students participated in the institutional IPPE full time for a two week period. Fifty-nine students responded to the online survey. Forty-six responded strongly agree or agree that the course was conducive to learning. Forty agreed or strongly agreed that the pace of the course was appropriate. Reflections indicated mostly positive experiences. The online survey assessed the value of required activities, such as patient safety and informatics. The focus group provided additional information regarding how students spent their time, with most students indicating they had more than adequate time to complete required assignments. All assessments indicated that students gained a better understanding regarding the role of an institutional pharmacist. Conversely, preceptor faculty expressed concern over the number of required assignments during the two week period. Overall, the preceptor faculty were very positive about the experience. Preceptor faculty were also appreciative of the scheduling of the IPPE, which did not overlap with APPE rotations. Implications: The different assessment methods provided valuable, if not sometimes conflicting, feedback of the IPPE experience. As a result of this feedback, we are revising the institutional IPPE to enhance the experience for both students and preceptor faculty.

Students Identify Pharmacy Operations, Medication Assistance Programs & Travel Vaccines as Highlights of Community APPE. Allison M. Dering-Anderson, University of Nebraska Medical Center, John E. Ridgway, University of Nebraska Medical Center, Don Klepser, University of Nebraska College of Pharmacy, Kimberly A. Norman, University of Nebraska Medical Center. Objectives: To identify those learning opportunities most frequently presented and those learning opportunities most appreciated during fourth year, community pharmacy APPE. Method: Fourth year pharmacy students were surveyed following sixty-one community pharmacy APPE. They were asked to quantify listed professional tasks, i.e. MTM,
vaccinations, and patient counseling. They were also asked to list highlights of the month-long experience. Results: Surprising to the authors were the responses to the request for highlights from the rotation. Of the 61 APPE evaluated, students responded that pharmacy operations discussions and projects, work with patient assistance programs and work with travel vaccines were favorite professional activities. More common professional activities: MTM, patient counseling, interprofessional communication were noted in the quantifying questions, but did not rise to the level of highlight in the discussion section of the survey. Implications: While opportunities to explore business issues, including indigent care, are taught during our didactic training, it was interesting to find our students highlighting those opportunities when promoting an APPE site/preceptor to classmates and colleagues. Increasing awareness amongst volunteer preceptors that these professional activities are valued and providing tools to incorporate these activities will be a goal for the 2012 Preceptor Education Program.

Students' Perceptions of Attributes and the Potential Impact of Experiential Training in Saudi Pharmacy School. Hisham Aljaadhey, King Saud University, Ahmed Awaissu, Qatar University, Sarah Alabun, King Saud University, Jeffery Hughes, Curtain University. Objectives: To assess the perceptions of final year pharmacy students at King Saud University with regards to: their preparedness and desirable attributes for delivery of pharmaceutical care and what attributes they would derive from an experiential training. Method: A pre-placement survey using a validated questionnaire was conducted to assess students’ perceptions of their own attributes related to the delivery of patient care and the degree to which they agreed that the experiential training would assist them in attaining those attributes. Results: A total of 121 pharmacy students responded to the survey. More than 80% of the pharmacy students believed that they possessed the ability to work in a team and that they were caring and compassionate. However, only 68% of the respondents fully agreed that they were excited with learning the subject of pharmacy and 26% did not see this as a desirable attribute. Although about two-thirds of the students admitted that it was desirable to possess leadership potentials, only 40% completely agreed that they possessed such attribute. Moreover, more than one-third of the participants did not believe in the desirability of independent life-long learning and only 62% admitted that they had this attribute. Notably, less than 10% of the pharmacy students indicated that they possessed the attribute of decision-making with inadequate data. Implications: These findings have important implications on the needs for reinforcing the education of pharmacy students about the importance of specific characteristics when providing patient care.

Students' Perceptions of a Two-week Block Institutional Introductory Pharmacy Practice Experience. Melissa M. Chesson, Mercer University, Nicole L. Metzger, Mercer University, Amy C. Grimsley, Mercer University. Objectives: To develop and implement a two-week, 80 hour institutional Introductory Pharmacy Practice Experience (IPPE) for third year pharmacy students and to assess students’ perceptions of the experience. Method: An institutional IPPE program was developed to meet accreditation standards and conducted over a two-week block. Thirty students experienced dispensing and clinical pharmacy activities at an academic medical center as facilitated by faculty, pharmacists, and residents. A 25-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 results. Results: Twenty-nine students (97%) completed the survey. Students agreed that participation in IPPE was worthwhile and would aid in preparation for advanced pharmacy practice experiences (APPE) (mean scores 4.7, respectively). The majority of students agreed that IPPE increased their knowledge and understanding of institutional pharmacy practice (93%) and the role of clinical pharmacy specialists (100%) (mean scores 4.7, respectively). Students reported that activities related to patient care, specifically, rounding with clinical pharmacy specialists, time in the inpatient pharmacy, and participation in a code response simulation were the most enjoyable (mean scores 4.5, 4.3, 4.5, respectively). Students indicated the least enjoyable activities included a calculations review and a review of statistics and literature evaluation (mean scores 3.3 and 3.2, respectively). 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 APPEs.

Students’ Perceptions of Simulated Order Verification and Medication Reconciliation Using Hospital Training Software. Nicole L. Metzger, Mercer University, Melissa M. Chesson, Mercer University, Amy C. Grimsley, Mercer University. Objectives: To develop a realistic simulation of inpatient order verification and medication reconciliation using hospital training software and to assess students’ perceptions of the simulation. Method: A patient case, including medication orders and home medications, was built into the hospital training software for institutional Introductory Pharmacy Practice Experience students. Students reconciled the patient’s medications and decided whether or not to verify the inpatient orders based on the patient’s history and labs. A 10-item survey using a 5-point Likert scale and two open-ended questions was administered to assess students’ perceptions of the simulation. Descriptive statistics were used to evaluate the results. Results: Thirty students (100%) completed the survey. Overall, 93% of students agreed that the simulation enhanced their learning (mean 4.1) and 70% agreed that the simulation stimulated their interest in institutional pharmacy (mean 3.7). Most students agreed that the simulation was realistic (97%), taught valuable clinical decision making skills (100%), and integrated information from previous courses (93%) (mean scores 4.3, 4.3, 4.4, respectively). Nineteen students reported that they liked the application of previous material and four students reported wanting more time for the simulation and clearer instructions for the medication reconciliation exercise. Implications: The majority of students reported positive perceptions of the simulation. Hospital training software can be used to realistically simulate the institutional pharmacist’s role in order verification and medication reconciliation, as well as reinforce material from previous courses and advance clinical decision making.

The Health Fair Tale: Student Perceptions of Participating in Health Fairs. Micah Hata, Western University of Health Sciences, Patrick Chan, Western University of Health Sciences, Maianh Nguyen, Western University of Health Sciences. Julie Hoang, Western University of Health Sciences. Objectives: To assess student pharmacists’ confidence in performing different functions at health fairs and to evaluate their perception of the educational value of these health fairs. Method: An online survey was administered to first (P1), second (P2), and third (P3) year student pharmacists from August 2011 to December 2011. Results: A total of 333 students completed the survey. Students agreed or strongly agreed to feeling confident measuring blood pressure (83%) and blood sugar (92%). Only 59% of the students felt confident measuring Body Mass Index (BMI) and 69% of them felt confident counseling on BMI. More P2 students than P1 students felt confident counseling on high blood pressure (92% vs. 69%, p<0.001) and high blood sugar (92% vs. 79%, p = 0.023). In terms of counseling on medications, the number of students confident in this area increased.
with their level in school (99% of P3s vs. 85% of P2s vs. 21% of P1s, p<0.001). Ninety two percent of the students agreed or strongly agreed that health fairs helped enhance their communication skills with patients. Overall, 91% of students agreed that health fairs can reinforce classroom learning and that participating in health fairs was vital to their education. **Implications:** Student pharmacists felt confident providing most of the services offered at health fairs, but they may need better training when it comes to BMI. As students progressed through the curriculum, they felt more confident counseling patients on high blood pressure, high blood sugar, and medications. Students believed that taking part in health fairs was a valuable part of their educational experience.

**Using CQI to Improve Student Participation in an Asthma Program During Advanced Pharmacy Practice Experiences.** Tricia M. Berry, St. Louis College of Pharmacy, Suzanne G. Bollmeier, St Louis College of Pharmacy, Jennifer Carroll, St. Louis College of Pharmacy, Theresa R. Prosser, St. Louis College of Pharmacy. **Objectives:** To use a continuous quality improvement (CQI) methodology to improve student driven interventions in the Asthma Friendly Pharmacy (AFP) program during community advanced pharmacy practice experiences (APPEs). **Method:** A CQI methodology was used to study the current process for student orientation procedures, evaluate trends in student intervention data, and develop ongoing follow-up and support during each module. Documenting a minimum of at least 25 AFP interventions/student/rotation became an expectation. Orientation materials were updated to improve clarity of the AFP patient and provider-oriented interventions, the evidence supporting the interventions, and processes for workflow integration. Additional training for pharmacist-preceptors was also provided. The AFP program coordinator communicated weekly with students to check on student activity, share best practices, brainstorm solutions to implementation barriers, and provide resources. **Results:** Baseline evaluation revealed the number of student interventions had fallen by 46% (10 interventions/student/module) over the previous 2 years despite AFP orientation prior to the community APPE. The total number of AFP interventions during the CQI year was 3913 (increase of 110% in total interventions; 143% in educational interventions and 40% in provider interventions). At least 1601 patients received one or more interventions (135% increase). The average number of interventions/student increased from 10 to 21. During the intervention period, 67.6% of students documented at least 25 interventions/rotation. **Implications:** The CQI process was successful in increasing and maintaining student-provided AFP interventions during community APPEs. Students gained valuable experience with integrating direct patient care services in the community pharmacy setting and assisting patients and providers with optimizing asthma medication use.

**Utilizing Academic Partner Multi-site Hospitals to Establish the Standard for an Institutional Practice APPE.** Christopher M. Miller, University of Kentucky; Leslie Kenney, Norton Healthcare, Anne Policastro, University of Kentucky, Michael C. Berger, University of Kentucky, William P. Allen, Norton Healthcare. **Objectives:** Global syllabi were developed for all APPE courses by the University of Kentucky College of Pharmacy with implementation of the six week rotation model. The objective of this project was to demonstrate that comprehensive experiential competencies for the Institutional practice APPE could be accomplished through education and standardizing site specific syllabi among academic partner multi-site hospitals. **Method:** The Institutional Practice APPE has the most comprehensive and varied experiential competencies assigned to the course. The local faculty member at the site and the experiential site coordinator educated site preceptors on the required student activities and identified samples of activities that would satisfy competency requirements. A standardized site specific syllabus was developed for each site. **Results:** Review of the electronic portfolios for students completing this APPE at the partnership hospital sites has demonstrated success with this program. Competencies that have been problematic for students to complete prior to this effort are being completed. Competencies in the area of quality assurance, medication utilization review, written communication, formulary management, and managing the practice are being completed consistently and with better quality. **Implications:** Developing a standardized Institutional APPE with an academic partner at multiple sites is meeting global syllabus competency requirements and enhancing this APPE experience. We expect to implement this model to elevate the educational experience at our other Institutional APPE sites.

**Value Added To IPPEs: Safe Medication Practices Project.** Raquel Rodriguez, University of Minnesota, Christene M. Jolowsky, University of Minnesota. **Objectives:** Students complete an institutional IPPE after their second professional year. They are required to complete a safe medication practices project, which meets the ACPE objective to examine one element of practice for a patient safety issue. The school provides sites with five sample patient safety projects to help with project selection. The impact of the projects on practice was gathered as part of this paper. The overall objective was to assess the impact of the Institutional IPPE Patient Safety Projects and to receive feedback about students’ performance. **Method:** All 59 institutional IPPE were contacted by phone to complete a semi-structured interview, to assess the project impact and to collect performance data. **Results:** Almost all preceptors were impressed with the quality of students’ performance, their motivation and engagement in the project. Although the Experiential program provided sample templates for the project, most projects corresponded to the site’s needs during the rotation period. The majority of the sites assigned a single project to the student, while some utilized all students assigned (3-4 students) for a single, large project. Projects were presented to different groups within the institutions. **Implications:** Preceptors agreed that the projects are meaningful, successful and facilitated or enhanced patient safety in their institution, and sites benefited from the assignment. Preceptors were impressed with the commitment and abilities of students working on the projects. The IPPE evaluation will be modified to solicit feedback on required projects; share the nature of projects with all sites and consider a best-project recognition for students and sites.

**What Do Rising P2 Students Accomplish on Public Health IPPE? An Analysis of Electronic Portfolio.** Teresa J. Lubowski, Albany College of Pharmacy and Health Sciences, William D. Poulter, Albany College of Pharmacy and Health Sciences, Laurie L. Briceland, Albany College of Pharmacy and Health Sciences. **Objectives:** To assess uploaded work in student portfolios as activity documentation upon completion of a 1 week public health experience. **Method:** Our Public Health IPPE requires each student to complete 3 of 6 listed activities, as determined by preceptor and student. Students document completion of selected activities in electronic student portfolios via E*Value. Portfolio postings were reviewed to determine adherence of the requirement to complete 3 different activity types, and to characterize the activity types completed. **Results:** A total of 274 rising P2 students from two campuses completed the 1 week public health IPPE during the summer of 2011. Sites included: YMCA; senior housing; medical societies; American Red Cross; Department of Health. A total of 86 students (31%) completed 3 different activities, 100 (37%) completed 2, 30 (11%) completed 1 and 58 (21%) did not post.
What Are Our Students Really Doing During Community Pharmacy Experiences?

Allison M. Dering-Anderson, University of Nebraska Medical Center; John E. Ridgway, University of Nebraska Medical Center; Don Klepser, University of Nebraska College of Pharmacy; Kimberly A. Norman, University of Nebraska Medical Center.

Objectives: To match the guidance of the ACPE Accreditation Standards and Guidelines Appendices C and D to the professional or clinical tasks and functions that are being performed by senior level pharmacy students during experiential rotations in community pharmacy. Method: Leadership from the University of Nebraska College of Pharmacy class of 2012 were approached to determine the best way to gather data. The authors and student leadership determined that a survey would be e-mailed to the students at the completion of each community pharmacy experiential rotation. No attempt was made to differentiate between elective and required experiences. Students were asked to report how many times they performed each of 16 tasks and functions. Results: 61 community pharmacy rotations were scheduled from May 2011 through January 2012. Key results reveal that the professional activities performed by senior level pharmacy students most often (>10 times/4 weeks) include: Counseling on a prescribed medication 77%, Counseling on an OTC or Self-Care Product 36.1%, Communication with a Prescriber’s office regarding a drug therapy problem 34.4%. Verification of the accuracy of a completed prescription 29.5%; and Administration of vaccine 18%. Implications: Knowing which professional activities students are performing during community APPE will allow for changes in preceptor training and support, as well as determination of the core competencies necessary to qualify as a “required” community APPE. Additionally, some professional tasks are underrepresented in these data and improving their presentation during community pharmacy APPE will be a goal during program restructuring.

“Interspecialty Pharmacotherapy Seminar” to Enhance Advanced Pharmacy Practice Experiences.

Manouchkate Cassagnol, St. John’s University; Maha Saad, St. John’s University; Maisch Nicole, St. John’s University; Danielle C. Ezzo, St. John’s University; Patel N. Priti, St. John’s University; Candace J. Smith, St. John’s University.

Objectives: To evaluate the effects of an “Interspecialty Pharmacotherapy Seminar” on Advanced Pharmacy Practice Experiences Method: Advanced Pharmacy Practice Experiences (APPEs) are designed to improve the knowledge base and skills of pharmacy students in order to fulfill the competencies required for the Doctor of Pharmacy degree. An Interspecialty Pharmacotherapy Seminar (IPS) was developed to increase students’ time and exposure to various specialty training areas. IPS was a program whereby, faculty with expertise in five specialty areas of pharmacy practice (Ambulatory Care, Critical Care, Drug Information, Geriatrics/Palliative Care and Cardiology) and APPE students met bi-weekly for a student-led discussion. Each interactive session uniquely focused on the students’ respective APPE specialty area. A web-based survey was developed to evaluate the students’ confidence on the following: presenting patient cases and leading small group discussions, identifying/prioritizing drug-related problems, creating/presenting a SOAP note, and evaluating/applying drug literature. The survey was also designed to determine if the students thought IPS enriched their APPE. Results: Of the 72 surveys emailed, 45 were completed (62%). The majority of students felt more comfortable presenting (70%) and leading (83%) small group discussions. They also felt more confident in creating/presenting a SOAP note (77%), identifying/prioritizing drug-related problems (80%), and evaluating/applying drug literature (82%). Overall, IPS helped to expand the students’ exposure to multiple specialties (83%), and enhance their rotational experience (93%). Implications: Students who participated in the IPS had the opportunity to broaden their knowledge base and expand their educational experience.

Theoretical Models

A Structured Longitudinal Professional Identity Development Curriculum for Pharmacy Students.

Anita Pokorny, Northeast Ohio Medical University; Richard J. Kasmer, Northeast Ohio Medical University. Objectives: To assist students with short- and long-term career planning. Method: This 4-year longitudinal curriculum is designed to assist students in identifying their primary career path through a 4-phase process: self-assessment, career exploration, decision-making, and implementation. The curriculum goals are set through didactic, self-assessment, experiential, clinical, and reflective activities, followed by small group de-briefing sessions with a faculty advisor. Didactic sessions and workshops include a Personality Type Workshop, a Pharmacy Career Fair, APhA Career Pathways Training for Pharmacy Professionals, CV/Resume writing, and interviewing. Students then work in small groups, called Professional Development Advising Teams (PDAT), led by a Clinical PDAT Advisor who is a practicing pharmacist. These meetings provide a forum to de-brief self-assessment work and clinical experiences and make connections between the two. Results: End-of-year program evaluations are used to gain student feedback and make program adjustments that meet student’s needs. An overall program evaluation from the first graduating class indicates that students are highly satisfied with the curriculum and found the curriculum useful in helping them to set short- and long-term career goals and make decisions. Implications: NEOMED’s curriculum is resource-intensive and requires a firm commitment from administration and the faculty, however, elements of the program can be adapted and utilized in a variety of different ways, making this model accessible to all pharmacy schools.

Development and Implementation of an Advanced Pharmacy Practice Experience to Enhance Cultural Competence of Pharmacy Students.

Vanessa G. Phillips, University of the Incarnate Word. Objectives: The Accreditation Council for Pharmacy Education guidelines require that a pharmacy school prepare culturally competent students to work as a pharmacist in any practice setting. The Feik School of Pharmacy implemented an advanced pharmacy practice experience (APPE) site at a local homeless shelter in San Antonio, Texas. The purpose was to engage pharmacy students with a diverse patient population to improve cultural competence while at the same time enhancing health care among the local homeless population. Method: Collaboration between the University of the Incarnate Word and Haven for Hope, a local homeless shelter, began in the fall of 2010. Under the supervision of a faculty preceptor, APPE students provide
medication reconciliation and education to prevent or minimize drugrelated problems to the residents. Additionally, at least two free health screenings per 6 week rotation are offered by the students to improve access to health care. Results: Since January 2011, 22 APPE students successfully completed an APPE rotation at Haven for Hope. The students enhanced their knowledge regarding barriers to health care among the homeless in addition to improving communication skills with persons of diverse backgrounds. Implications: Academic-community partnerships are critical when implementing pharmacy practice experiences with the purpose of enhancing student cultural competency. The collaboration is additionally beneficial to improve access to health care among the local communities. It is important for pharmacy schools to understand that health disparities education does not end in the classroom. Education must continue into the APPE program to prepare a cultural competent student.

Development and Implementation of an Innovative Hybrid Didactic and Experiential Medication Therapy Management (MTM) Elective. Hoai-An Truong, University of Maryland, Nicole J. Brandt, University of Maryland, Carmela N. Groves, University of Maryland. Objectives: To describe the development and implementation of an innovative hybrid didactic and experiential MTM elective for students during advanced pharmacy practice experiences (APPEs). Method: Expanding on the provision of MTM training for pharmacists and preceptors in Maryland, an integrated didactic and experiential MTM elective was developed and implemented four years ago for students during APPEs. Course outcomes were mapped to the Center for the Advancement of Pharmaceutical Education, a jointly developed certificate training program by the American Pharmacists Association and American Society of Consultant Pharmacists, and the University of Maryland School of Pharmacy’s terminal performance outcomes. Educational methods and activities involved 10 hours lecture, 2 self-study cases, 4 case discussions, and 3 actual patient encounters for medication therapy reviews (MTRs) beyond APPEs. Assessments included 1 examination, 1 case study, and 1 case presentation. Application-based learning is emphasized through active and self-directed learning modules. Results: MTM elective was taught during two winter mini-terms and two fall semesters over four years with a 20% enrollment limit of the graduating class and a wait-list each time offered. Currently, 118 students completed the course, averaging 30 students annually. To date, 354 comprehensive MTRs were performed for 118 patients, averaging 3 per patient. Upon graduation, about 30 students have become preceptors for community APPE. Implications: MTM hybrid elective course provided an innovative, high-demand training opportunity and filled an unmet need for student pharmacists during APPEs. In addition to providing benefits of MTRs to patients, MTM elective trained future APPE community preceptors for the School.

Development and Implementation of a Simulated Introductory Pharmacy Practice Experience. Manouchka the Cassagnol, St. John’s University, Danielle C. Ezzo, St. John’s University, Maha Saad, St. John’s University, William Maidhof, St. John’s University, Emily M. Ambizas, St. John’s University, Maria Lehfried, St. John’s University, Candace J. Smith, St. John’s University, Joseph M. Brocavich, St. John’s University. Objectives: To describe the development and implementation of simulated activities as part of the Introductory Pharmacy Practice Experiences (IPPEs). Method: The recently revised Accreditation Standards and Guidelines (2.0) allow for the utilization of simulated experiences as a portion of the IPPEs. Select full-time faculty from various practice backgrounds developed an introductory simulation experience for pharmacy students in the second semester of their first professional year. Specific learning objectives and activities were developed based on previously taught didactic material. The simulated experience consists of 13 weekly modules and a longitudinal activity. Simulated community and institutional experiences were created focusing in the areas of patient assessment, communication and medication therapy management. A workbook containing weekly activities was developed along with a corresponding website that contained virtual patient profiles; drug-related information; and links to policies, forms and documents. Results: Under the direction of full-time faculty, Advanced Pharmacy Practice Experience students, and pharmacy practice residents, students meet four hours a week for the entire semester. Simulated activities include physical assessment, patient assessment and dosing calculations, interpreting and evaluating patient information, medication/patient safety, patient counseling, and other institutional and community pharmacy practice activities. The longitudinal activity consists of weekly interviews with an approved individual using guided questions and a reflective journal. Implications: These simulated experiences provide uniformity and allow students to begin connecting and applying learned concepts to real practice experiences.

Development of Introductory Pharmacy Practice Experiences Utilizing Evidence Based Methods of Adult Learning. Rebecca L. Focken, North Dakota State University. Objectives: To describe the development of introductory pharmacy practice experiences at North Dakota State University utilizing adult learning theories and methodologies. Method: A review of adult learning literature including theories of adult learning and adult learning methodologies was conducted both within and outside healthcare disciplines. Results: The findings of this literature review were used to guide in the development of a three-year evidence based introductory pharmacy practice experience curriculum at North Dakota State University. The application of adult learning methodologies to North Dakota State University introductory pharmacy practice experiences including learning contracts, self-evaluation, and reflection will be described. Implications: The development of introductory pharmacy practice experiences utilizing evidence based methods of adult learning allows pharmacy educators to recognize how evidence found both within and outside healthcare disciplines can be applied in pharmacy education. The development of coursework based on theories and/or methodologies of adult learning provides a framework from which to evaluate student learning and will contribute to the ability of future educational research in introductory pharmacy practice experiences to be applied across disciplines.

Development of an Institutional Introductory Pharmacy Practice Experience Assessment Plan. Rebecca L. Focken, North Dakota State University. Objectives: To describe the development of an institutional introductory pharmacy practice experience assessment plan utilizing direct and indirect assessments of student learning. Method: A review of adult learning literature including theories of adult learning and adult learning methodologies was conducted both within and outside healthcare disciplines. Results: The findings of this literature review were used to develop an assessment plan that includes both direct and indirect assessments of student learning within the curricular structure of the institutional introductory pharmacy practice experience at North Dakota State University. Direct assessment techniques utilized include student evaluation by the preceptor and electronic portfolios. Indirect assessment techniques utilized include evaluation of site/preceptor by the student, self-evaluations, and reflection. The incorporation of these assessment techniques within an institutional introductory pharmacy practice experience assessment plan will be described. Implications: The rational development of assessment plans in introductory pharmacy practice experiences provides
pharmacy educators the opportunity to demonstrate student learning utilizing a variety of assessment techniques and is necessary for university and ACPE accreditation standards. Additionally, development of assessment plans supported by adult learning theory and/or methodologies provides pharmacy educators with opportunities to contribute to educational research across multiple disciplines.

**Human Patient Simulation Development for Pharmacy Residency Curriculum.** Indran I Kar, University of Pittsburgh, Amy L. Seybert, University of Pittsburgh. **Objectives:** Human Patient Simulation (HPS) has been shown to enhance pharmacy student knowledge and management skills of patients. Several pharmacy schools currently use such technology to supplement courses and assess student progress within PharmD curricula. Few pharmacy residencies make use of HPS within their training. There is a need to address complex topics required of pharmacy residencies that may not be experienced by residents during the year. Incorporation of HPS in pharmacy residency training could increase knowledge, attitude, confidence, and skills of residents while providing an avenue in the expansion of residencies. An independent study course is being used to develop HPS cases for use within the regional pharmacy residency program at a large university hospital system. **Method:** Assessment of ASHP accreditation standards, assistance from faculty, previous studies, and resident surveys allowed the student to identify appropriate case topics for HPS development. By using published case studies, disease state guidelines, and faculty review, cases are being formulated for programming into the patient simulators. **Results:** Seven cases are developed and currently being programmed. The postgraduate resident survey results will assist in identifying additional case topics for future programming. **Implications:** Participation in HPS as part of a residency program may increase knowledge, confidence, attitude, and skills required to handle such cases and advance residency programs to better prepare residents for future practice.

**Integrating Health Disparities into Experiential Education and the Pharmacy Curriculum: A Certificate Approach.** Elizabeth A. Hall-Lipsy, The University of Arizona, Amy K. Kennedy, The University of Arizona. **Objectives:** Health disparities are widely recognized as a major public health problem. A key strategy to reducing these disparities, as proposed by numerous professional organizations, includes training health care professionals in the complex issues of health disparities. Very few colleges and schools of pharmacy include health disparities course offerings. **Method:** The University of Arizona College of Pharmacy developed a certificate in health disparities that integrated coursework, community assessment field work, and IPPE and APPE rotations in rural, underserved areas in Arizona. A review of existing health disparities certificate programs was conducted across health disciplines and course syllabi for health disparities courses and community assessment courses taught in medical and public health schools and colleges were reviewed. Course objectives and activities were developed and a proposal for a certificate program was approved by the curriculum committee and the college. **Results:** Challenges were encountered in attempting to obtain university approval of the graduate certificate because pharmacy students were not classified as graduate students, but rather professional students. Accordingly the certificate was implemented as a college certificate. Despite these challenges, a total of 37 students (14 from the class of 2014 and 23 from the class of 2015) have enrolled in the certificate program to date. **Implications:** It is anticipated that this certificate course will build on the knowledge, skills, and abilities of students to identify health disparities and allows opportunities for students to critically analyze the root causes, contributing factors and potential means of reducing or eliminating health disparities in underserved communities.

**Integration of Service Learning Activities into Introductory Pharmacy Practice Experiences.** Jose L. Barboza, University of South Florida, Amanda DeBruin, University of South Florida, Renee Brown, University of South Florida, Angela M. Hill, University of South Florida, Amy H. Schwartz, University of South Florida, Kevin B. Snead, University of South Florida. **Objectives:** The goals of the first year Introductory Pharmacy Practice Experiences (IPPE) at the University of South Florida College of Pharmacy are to enhance the service learning outcomes achieved by pharmacy students and to prepare them for future experiential training. **Method:** Students are placed in three mandatory practice sites and self select a fourth site. The students prepare and present a curriculum designed to minimize risky behaviors at an after school program, serve as senior companions at an assisted living facility, and support lead poisoning prevention and healthy home initiatives with the Florida Department of Health. The fourth site selected by students must meet a community need and be pre-approved by the experiential team. **Results:** We expect our students to achieve the Accreditation Council for Pharmacy Education’s (ACPE) recommended service learning outcomes, improve their level of professionalism, and enhance their communication skills. These service learning opportunities will allow students to link skills learned in the classroom to practice settings that encompass various age groups and socioeconomic backgrounds. **Implications:** The integration of service learning activities within our IPPE program is designed to instill a sense of altruism in students and may serve as an example for curricular development within other pharmacy schools.

**Interdisciplinary Community Programs for Minority Seniors on the Management of Cardiovascular Disease and Diabetes.** Rita Marcoux, The University of Rhode Island, Noemi Ramos-Dessimone, The University of Rhode Island, Luz Posada, The University of Rhode Island, Nancy Tortolani, The University of Rhode Island. **Objectives:** Provide culturally sensitive educational programs that focus on modifiable risk factors for diabetes and cardiovascular diseases among minority seniors in Rhode Island. Offer team-based experiential opportunities for Pharm.D. and dietetic students using a multidisciplinary approach in developing health educational programs. The programs emphasize practical strategies for chronic disease self-management of cardiovascular disease and diabetes. **Method:** The University of Rhode Island’s Pharmacy Outreach Program and SNAP-Ed Nutrition Education Program, in partnership with the Providence Housing Authority, provided a series of educational programs in both English and Spanish. Pharm.D. and dietetic students developed slide presentations and informational handouts. The programs combined the pharmacy presentations: “Managing your high blood pressure”, “Hypoglycemia, Hypoglycemia, and sick day management with diabetes” and “Healthy Heart” with the nutritional presentations: “Sodium in your diet”, “Complex and simple carbohydrates”, and “Saturated and unsaturated fats”, respectively. The dietetic students and their preceptors used food props and offered participants healthy food recipes and samples. Pharm.D. and dietetic students assisted their bilingual preceptors throughout these presentations. **Results:** Thirty programs were conducted in urban community centers in which 163 participants attended. **Implications:** In Rhode Island, the rate for obesity is 22%, 7% for diabetes, and 8% for cardiovascular diseases. The highest rates are found among the state’s minority populations. The interdisciplinary programs target these health disparities and provide students with experiential opportunities within diverse community based senior populations with cardiovascular disease and diabetes.
Students learn to counsel and educate patients on behavior modifications including medication compliance, physical activity, and nutritional changes.

**Verbal Communication Improvement Workshop for Self-Identified P3 Pharmacy Students.** Asim M. Abu-Baker, St. John Fisher College, Lauren A. Vicker, St. John Fisher College. **Objectives:** While all pharmacy programs assess students' oral communication skills, the literature does not reveal any consistent pattern of training, or programs targeting students who have demonstrated serious issues with verbal communication skills. The purpose of this study was to collaborate with an academic communications department to offer self-identified students a verbal communication workshop with the aim of building their confidence, comfort, and technical skills in verbal communication. **Method:** Ten self-selected third-year Pharmacy students participated in a four-week verbal communication skills workshop. Students completed a 24-item Personal Report of Communication Apprehension (PRCA) and a questionnaire about their backgrounds and public speaking experience prior to the course. During each two-hour, twice a week session, the instructor presented verbal communication topics and students presented to the group, either a prepared presentation or an impromptu speaking experience. Digital video recordings of student presentations were viewed in class for constructive criticism, and the students also received copies of their presentations. On the final day of the workshop, each student again filled out the PRCA and a course evaluation form. **Results:** Eight of ten students completed the workshop. Overall PRCA scores improved for seven out of eight students. And, public speaking self-assessments showed a positive outcome. **Implications:** Communication skills for students who have issues with verbal communication can be addressed through collaboration with other departments on campus. This study provides a model for such a course.

**Working with Patients During Medicare Part D open enrollment:** Donna L. Bartlett, Massachusetts College of Pharmacy and Health Sciences–Worcester, Colleen Massey, Massachusetts College of Pharmacy and Health Sciences–Worcester, Brian Amsler, Massachusetts College of Pharmacy and Health Sciences–Worcester. **Objectives:** MCPHS-Pharmacy Outreach Program provides plan evaluations for Medicare Part D Plans (MPDP) while taking into consideration other assistance programs such as Extra Help through Social Security and State Pharmacy Assistance Programs (SPAP). It was our objective to provide an opportunity for the students rotating through the Program to work with the Medicare Plan Finder Tool, to assist patients in the selection of MPDP, and through this experience learn the value of understanding the intricacies of insurance coverage. **Method:** Students were provided formal training and informal on-going support regarding benefit programs throughout their rotations. Students received requests for assistance via the telephone and mail. To evaluate the requests, students utilized the Plan Finder Tool and performed other research on-line and through training documents. Students analyzed multiple benefit programs and provided a comprehensive review of the best options. The suggested plans were communicated over the telephone or by written correspondence. **Results:** Students provided 906 hours at the Program during Medicare Part D Open Enrollment 2012, and assisted with 1134 plan evaluations. Students learned the process of reviewing plans and provided critical evaluation of the numerous plans offered based on cost, coverage, and other assistance not calculated in the Plan Finder Tool such as SPAP. They were able to communicate how a particular choice could affect an individual’s ability to access medications affordably. **Implications:** Students successfully provided sound assistance, learned from the experience, and will be able to provide this valuable service in their practice.

**LIBRARIES/EDUCATIONAL RESOURCES**

**Completed Research**

**Challenges and efficiencies of iPad 2© use to Optimize Ambulatory Care Pharmacy Faculty Practice.** Jessica Dana, Belmont University, Kristina Wood, Belmont University, Elisa Greene, Belmont University, Rachel Franks, Belmont University, Traci Poole, Belmont University, Philip E. Johnston, Belmont University, Cathy H. Ficzere, Belmont University. **Objectives:** To identify efficiencies and challenges with iPad© use to optimize ambulatory care pharmacy faculty practice. **Method:** Ambulatory care pharmacy faculty received an iPad 2© for use at their respective practice sites to increase access to electronic resources required for completion of routine clinical activities. A multi-departmental faculty group was formed to identify the efficiencies and challenges associated with iPad 2© to use. The group included all iPad 2© ambulatory care pharmacy faculty end-users, the drug information faculty member, the pharmacy informatics faculty member, and an administrative faculty member. The group met weekly to share experiences and identify and troubleshoot problems as they occurred. **Results:** The multi-departmental group of faculty members identified the following efficiencies associated with iPad 2© use: ability to document standard clinical pharmacy interventions, access practice site electronic health record (EHR) wirelessly, and improved access to drug information resources. The group identified the following challenges: unreliable site internet connectivity for iPad 2©, site specific policies restricting access/use of EHR on the iPad 2©, and compatibility/access issues with Microsoft© Office Products. **Implications:** New technology, such as the iPad 2©, offers multiple potential benefits to optimizing ambulatory care pharmacy practice by faculty; however, it is not free from challenges. As academic organizations implement new technology to optimize clinical faculty pharmacy practice, consideration must be given to potential challenges in order to maximize use of the technology.

**Does Implementation of Active Learning Correlate with Increased Retention of Material During the P4 year?** Angel M. Beck Kimble, University of Charleston, Marcella Hoyland, University of Charleston, Julie A. Testman, University of Charleston, Kristy Lucas, University of Charleston, Mary L. Euler, University of Charleston. **Objectives:** To determine if a systematic change in teaching methodology from lecture-based to discussion-based class session for a series of three consecutive pharmacotherapy courses in the PharmD curriculum correlates with increased student learning. **Method:** A comprehensive examination was designed to assess student retention of therapeutic topics taught using two different methodologies. Content from Pharmacotherapy I was taught using slide presentations and lecture-based class sessions. Pharmacotherapy II and III, were taught using discussion-based class sessions, holding students accountable for pre-reading material in preparation for class discussions. The class of 2012 had experienced this change in teaching methods between their P2 and P3 years. During their P4 year, the class of 2012 was given a comprehensive assessment, comprised of exam questions utilized during their pharmacotherapy courses. Material from each of the three courses was divided amongst 100 exam questions and built to equally represent levels of Bloom’s taxonomy (knowledge, comprehension, application). **Results:** The class of 2012 completed the comprehensive exam via ExamSoft with a total of 70 exam takers (100%) and an overall average of 58.84%. The following percentages were found when looking at each
A majority of students also indicated that their experience of using the pharmacy-related databases and Google Scholar at this level would be beneficial to their future studies. **Implications:** Adaptation of a general course with discipline-specific topics and resources enhanced student engagement. Moreover, students appeared to place a higher value on the need for information literacy skills as they found them relevant to their future profession.

**Information Literacy Skills of Incoming First-Year Pharmacy Students: Survey Results.** Jennifer R. Martin, *The University of Arizona*, Marion K. Slack, *The University of Arizona*, Sandra S. Kramer, *The University of Arizona/AZ Health Sciences Library*. **Objectives:** To use a survey tool to assess the information literacy of incoming first-year pharmacy students. The tool was developed to provide a baseline measurement of library knowledge of students entering a professional pharmacy program with a bachelor’s degree versus students without a bachelor’s degree. **Method:** A survey tool was developed and administered during orientation, prior to any course instruction. Questions focused on basic library skills and asked students to rate their confidence in their answers to these questions. Demographic information was collected to determine the number of students who have received a four-year degree. The data was collected and analyzed with a point system. **Results:** A total of 100 surveys were returned out of the class of 101, a 99% response rate. Of the respondents, 56 students received their bachelor’s degree, and 9 students had some library instruction prior to entering pharmacy school. The self-assessment range of confidence, where 1 is the lowest and 5 the highest, was on average 2.7 for students with degrees versus 2.6 for non-degreed students. One comparison was found to be significant (p-value = 0.033): students without degrees were more willing to ask for help than students with degrees. On average, the information literacy skills of students with and without degrees were the same. **Implications:** With the exception of asking for help, there were no significant differences between these groups of students. The results provided an overview of library knowledge and provided a baseline measurement of their skill level, which allowed the librarian to address the weaker areas.

**Mapping as a Tool to Visualize and Quantify the Impact of Curricular Redesign.** Lisa Lebovitz, *University of Maryland*, Robert S. Beardsley, *University of Maryland*. **Objectives:** Innovative mapping techniques were used at the University of Maryland to assure complete coverage of ACPE Appendix B content and the School’s terminal performance outcomes (TPOs). These new maps provided an evidence-based, visually simple representation of changes made during our curriculum redesign process and also provided clear information for faculty experts as to where their material was best situated in the curricular structure. **Method:** During this process, course managers of core courses in both the ‘old’ and ‘new’ curricula mapped out content and outcomes using codes of I, R and E to indicate the extent to which a concept was Introduced, Reinforced, or Emphasized. A formula was applied to apportion the total credit weight of each course among its mapped concepts. Totals were graphed by percentage and by relative credit weights of each concept or outcome. **Results:** Comparisons were then made between previous and revised curricular formats, and also between the elements within the new curriculum. This technique assisted the School in addressing identified deficiencies; for example, an ACPE recommendation to increase clinical content earlier in the program. As evidenced in the accompanying graphs, this issue, along with others, was addressed successfully during the curriculum revision process. In addition, we documented that the School’s TPOs remained appropriately distributed among the new courses. **Implications:** An interesting side note is that we found that the
Peer, Partner, or Service Provider: Identifying Novel Library Liaison Roles in Academic Health Sciences. K. T. L. Vaughan, University of North Carolina at Chapel Hill, Barrie E. Hayes, University of North Carolina at Chapel Hill. Objectives: To identify novel library services for liaisons to academic health sciences schools. An understanding of unique and unusual services can inform the development of new programs and the improvement of existing ones. Method: Common, unique or unusual, and potential library liaison activities were identified and categorized. First, a group of health sciences librarians were asked to individually brainstorm what services they provide in their liaison work regularly, occasionally, and that they could potentially provide with additional resources and/or demonstrated constituent interest. The group was then convened to compare lists. The resulting lists were collected and analyzed for clusters such as research, networking, and instruction activities. A secondary exploration of novel services was performed by scanning published and grey literature on the topic; these results were incorporated into the final clusters. Results: While nearly all of the liaisons shared certain regular activities, the quantity and variety of unique or unusual occasional services was impressive. In addition, liaisons suggested a large quantity and variety of potential services. Many of the unique and potential services go beyond the librarian as simply a service provider, instead casting the liaison in the role of research partner and faculty peer. Implications: These results support the reimagining of the librarian’s role in academic health sciences environments. As it is difficult to identify which services are of interest to constituent communities, this poster will present this completed research and will take advantage of the unique faculty/librarian population of AACP to gather additional information.

Student Attitudes toward Different Active-Learning Methods in Two Second-Year Pharmacy Courses. Alex C. Dow, Scott J. Bergman, Southern Illinois University Edwardsville, Cathy Santanello, Southern Illinois University Edwardsville. Objectives: There is evidence that demonstrates the efficacy of active learning methods. However, there has been little evidence comparing active learning methods in pharmacy courses. Our aim was to increase the use of active-learning in our courses and assess students’ perceptions of each method. Method: The participants of this study were second-year pharmacy students enrolled in the Microbiology and Immunology (fall) and Infectious Diseases Pharmacotherapeutics (spring) courses. We taught different class sessions using five different active learning methods: Audience response systems, case-based learning, memory matrix, muddiest point, and Think-Pair-Share. After IRB approval, students were surveyed in both courses on how engaging and helpful they felt each learning method was to them and whether they would recommend it be continued. Results: Students responded that case-based learning and audience response systems were most engaging and helpful in learning. Case-based learning was preferred in the therapeutics course whereas the use of an audience response system was the most highly recommended method in Microbiology and Immunology. Implications: This study gives insight into perceptions toward active learning methods used for different course subjects. Students tended to prefer frequent use of case-based learning in a class that was more application-based and audience response systems in a class that had more factual material. In conclusion, instructors should weigh student preferences, as well as the type of material they teach to decide which active learning methods would be beneficial to use in their courses.

The Marketing Truth: Pharmaceutical Advertisements and Their Ethical Nature. Yashwant V. Pathak, University of South Florida, Hardam Tripathi, University of South Florida. Objectives: Pharmaceutical advertisements have fabricated credentials misleading to patients and health professionals. A thorough analysis should be performed on the marketing truth behind pharmaceutical advertisements. This study is aimed at identifying key factors involving direct to consumer advertising of pharmaceutical drugs in accordance the providers. Method: Advertisements were analyzed for drugs, compared to their sales rates. The use of “opinion leaders,” the application of PhRMA codes and guidelines, and market segmentation were found in all forms of ads and compared to each other to see which companies stuck more to the “marketing truth” of what the specific drug was supposed to do. Personal surveys of pharmacists, doctors, and patients were taken to provide statistical data to allow further quantitative interpretation, 40 responses were used for analysis. Results: Analyzed inferences showed that companies used BMT and stuck to PhRMA rules and codes of conduct but slightly changed their corporate strategy to meet the needs of their specific corporation. Advertisements with less marketing were generally more attractive to patients, while being less attractive to the health care providers. The Fortune 500 pharmaceutical companies were found to spend more on advertising and marketing than the research of the drugs themselves. Implications: It can be inferred that patients and laypeople who are consumers, preferred pharmaceutical advertisements that had less side effects on the ad itself, along with the ad being more personable or humorous. External factors such as drug reps, seasonal changes, and laws played factors in sales volume varying with each organization.

Using Systematic Reviews and Cost-Justification Models to Emphasize Concepts in a Research Design Course. Miriam A. Ansong, Sullivan University, Kyla James, Sullivan University. Objectives: To emphasize the concepts of programmatic research using systematic reviews and cost-justification models applicable to clinical telepharmacy services. Method: Students’ comprehension of programmatic research as part of experimental studies covered in a research and literature evaluation may be challenging. To emphasize this concept in the structured course, the implementation of clinical telepharmacy service was chosen. Clinical Telepharmacy pilot study conducted at the College of Pharmacy (SUCOP) has been used to emphasize this concept since 2009. After completion of the pilot study, it was evident that application of cost models to the service will help tie the concept as delivered in the course didactically. A comprehensive literature search was conducted in Pubmed, IPA, CINAHL databases as well as alternate resources to identify applicable cost-justification models for implemented clinical pharmacy services from inception to 2011. Of all studies, three were chosen as a potential cost justification models for clinical telepharmacy services. Factors influencing selection included, but was not limited to the following criteria: type of comparator used: historical control data versus actual control group attributes of the population that was studied, type and description of economic analysis, and type of study. A comprehensive systematic review proposal was written from the selected studies. Excerpts from the proposal were utilized in class to emphasize the concepts of conducting systematic reviews using different active learning techniques. The cost models were used to link the impact of implementation of clinical pharmacy and telepharmacy services to programmatic research. This enhanced students’ understanding of the concepts as evidenced through consecutive assessments, participation, and inquiries. Details of the active learning techniques will be presented at the conference. Results: This enhanced students’ understanding of the concepts as evidenced through consecutive assessments, class participation, and inquiries. Details of
the process and active learning techniques will be presented at the conference. **Implications:** The investigators plan to fully incorporate this approach into the didactic course the following year and evaluate students’ perception of the techniques.

### Theoretical Models

**Faculty and Student Development Preparing for the Converged Classroom Connecting Two Campuses.** Martha H. Carle, *University of Arkansas for Medical Sciences*, Karen D. Irons, *University of Arkansas for Medical Sciences*. **Objectives:** Faculty and students will practice with the learning management (LMS) and IVN systems in order to prepare for the delivery of content in the converged classroom based on Constructivist Learning and Chickering and Gamson’s Good Practices. **Method:** With the beginning of a second campus and a new LMS, the eLearning team offered faculty and student development over the summer to support the converged classroom. Faculty (51) and students (265) were immersed in the LMS as students to experience content delivery and practice the fundamentals of course navigation. Faculty (47) and selected students (17) attended hands-on training for the LMS and IVN system throughout the summer. Students (361) also received classroom instruction highlighting various features of the LMS and IVN systems. **Results:** Faculty requested: 23 LMS course shells (23 Grade-book/Content; 7 Hybird; and 2 Online). Faculty administered 26 exams and 110 quizzes; 39 Assignments; 36 Blogs; 5 Discussions; 12 Group Assignments; 23 Softchalls and 6 Studymate games through the new LMS. In addition 30 faculty members used clicker technology in the classroom. Over 185 class sessions were archived and placed in the LMS for student review. **Implications:** With practice through the summer, faculty adopted a more student-centered learning approach to engage learners with the course content. Students were able to experience the learning tools and instructional strategies expected from the converged classroom. Faculty and students reported high satisfaction with the summer development sessions.

**Using Case-based Active Learning Techniques to Promote Critical Thinking in a Pharmacy Law/Ethics Course.** Martha H. Carle, *University of Arkansas for Medical Sciences*, Jonathan J. Wolfe, *University of Arkansas for Medical Sciences*, M. Darren O’Quinn, *University of Arkansas for Medical Sciences*. **Objectives:** After completing the course students will be able to identify and solve Law/Ethics problems using the critical thinking process learned through active learning techniques. (Standard 11, ACPE Guidelines 11.2 and 15.1) **Method:** Instructors in the P3 year added case-based active learning techniques to support critical thinking skills. Students were introduced to the critical problem-solving model in an Ethics series of class discussions using “clickers”. Students were assigned a case to solve using a series of steps: identify the problem; brainstorm solutions; analyze solutions; determine benefits; choose solution; and evaluate. A rubric was created for evaluation. In the law portion of the class, weekly blogs were assigned to students to solve cases. In addition, the blog groups made case presentations facilitated by a lawyer in large group sessions. Weekly online quizzes measured textbook knowledge. The final examination, traditionally multiple choice, added a case scenario for students to identify legal issues. A rubric was used for evaluation. **Results:** Case-based active learning techniques promoted critical thinking. Students became confident identifying and solving problems using the Critical Thinking Model. Final course scores improved: 83.47% in 2009 (with no case studies); 89.68% in 2010 (with Ethics case studies); and 91.51% in 2011 (with Ethics and Law case studies). **Implications:** Case-based active learning added value to individual case solving and stimulated reasoning within a realistic framework. Case discussions using the Critical Thinking Model are being added to the P1 and P2 coursework as preparation for professional decision making and problem solving.

### PHARMACEUTICS

**Completed Research**

**APPE Research Elective on Stability Evaluation of Compounded Drug Products.** Fang Zhao, *St. John Fisher College*, David J. Hutchinson, *St. John Fisher College*, Katherine Juba, *St. John Fisher College*. **Objectives:** Special patient populations such as pediatric and hospice patients may require compounded medications, because the commercially available products do not meet their clinical needs. The objective of this APPE elective rotation was to allow students to apply pharmaceutics research skills to address the clinical needs for compounded drug products in special patient populations. **Method:** A 6-week APPE rotation was designed and implemented with a focus on stability evaluation of compounded drug products. Prior to the start of each rotation, a suitable project was selected by the clinical and science faculty collaborators. During the rotation, the student first received the lab training and reviewed clinical background for the compounded drug product. The student then developed a stability-indicating HPLC assay and designed the stability study protocol. Finally the student conducted the stability study and authored the project report. **Results:** This APPE elective rotation was offered once during each of the last 3 academic years. Among the three students who took this elective, two were able to complete the projects as planned, and one did not due to technical difficulties with the instrument. One project report was published in a peer-reviewed journal, which provided.
Antimicrobial Activity of Extracts of the Sonoran Desert Lichen Species Acarospora Socialis H. Magn. Melanie A. Jordan, Midwestern University’s College of Pharmacy-Glendale, Sean McGeeMaster, Midwestern University’s College of Pharmacy-Glendale. Objectives: Lichen are a potentially valuable resource for novelantibacterial, anticancer and antiviral therapeutic molecules. Acarospora socialis H. Magn. is an abundant lichen species growing in the Sonoran desert that has not been investigated for therapeutic properties. Therefore, this project investigated the potential in vitro antimicrobial activity of Acarospora extracts against Methicillin-resistant Staphylococcus aureus (MRSA). Method: A. socialis samples were collected from the Sonoran desert (Phoenix, AZ) and methanol extracts were prepared (~30 mg/mL). Samples were separated on silica TLC plates using a mobile phase of 170:30:toluene:glacial acetic acid and visualized using UV light. Usnic acid and vulpinic acid, common known lichen constituents, were used as standards. MRSA (Staphylococcus aureus subsp., aureus ATCC® 43300™) was grown overnight in trypticase soy agar (TSA) broth and plated on TSA plates for use in bioautography experiments. TLC plates were applied to MRSA streaked agar plates for one hour and then removed. Agar plates were then grown for 12-16 hours at 37°C, 5% CO2. Zones of inhibition corresponding to active compounds were observed and recorded. Results: One major (RF ~0.8) and one minor (RF ~0.2) compound with anti-MRSA activity were identified from A. socialis extracts. The major compound was tentatively identified as usnic acid, a compound which currently is probably the clinical significance of this RDT product. There has been growing evidence that repeated exposure to enteric-coated NSAIDs is still harmful to the gastrointestinal tract as the enteric coat basically transfers the site of harm from the stomach to the small intestine. Fasprofen® could be viewed as a viable solution to this problem.

Compounding Accuracy: A Study of the Development of Student Compounding Skills. Rasma S. Cherson, St. Louis College of Pharmacy, Rhonda L. Bilger, St. Louis College of Pharmacy, Noha Salama, St. Louis College of Pharmacy. Objectives: Accurate compounding of prescriptions is a fundamental skill of competent pharmacists. This study aimed to assess the development of student compounding accuracy during the pharmaceutics course and to explore potential gender effects. Method: Students (n=209, 130F) compounded an aqueous solution in which one active ingredient was substituted with FD&C Red Dye #40/lactose mixture (1:200) during two laboratories. Aliquots were analyzed at A λ=500nm and the corresponding concentrations were calculated using a standard curve (1.5-18ug/mL). The percent error was calculated for each preparation in both laboratories. The mean (±SD) of the percent error was statistically compared overall and for each gender between the two laboratories. Results: The mean (±SD) of the percent error (8.6±16.5) for laboratory-1 did not significantly differ from the mean for laboratory-2 (6.4±5.9). For laboratory-1, 75% of the students accurately compounded the prescription with <10% error compared to 78% of students for laboratory-2. Gender did not significantly influence compounding accuracy (8.2±15.1 vs. 9.2±18.7 and 6.4±6.3 vs. 6.4±5.2 for laboratory-1 and 2 for females vs. males, respectively). Implications: Compounding accuracy is fundamental in product performance. The Missouri State Board of Pharmacy randomly tests compounded products and considers acceptable ±10% of the expected potency. The study confirmed that the majority of students met this specification by the conclusion of the pharmacuetics course. Early intervention to improve accuracy is still needed to reinforce this essential component of pharmacy practice in the 22% of students not meeting this specification.

Creation of a Calculations Benchmark Examination: An Assessment of Pharmacy Students’ Calculation Skills. Stewart D. Allison, Regis University, Bianca B. Calderon, Regis University, Leah Sheridan, Regis University, Chad W. Martell, Regis University, Matthew G. Fete, Regis University, Leticia A. Buffet, Regis University, Susan M. Paulsen, Regis University. Objectives: To assess the level of competency of students at the Regis University School of Pharmacy (RUSOP) to perform pharmacy-related calculations. Method: Evidence suggests that a percentage of incoming pharmacy students lack the skills necessary to perform pharmacy-related calculations (Pharmacy Education (2007) 7(1):53-59). In response to unanticipated calculations remediation in the Spring of 2011, a faculty task force was created to support student performance in pharmacy calculations. In order to identify current and incoming students who would benefit from additional help with calculations, a benchmark examination was created and administered to students early in the Fall 2011 semester. The examination was designed to test foundational skills necessary to perform important pharmacy calculations. To minimize test anxiety and to reduce intimidation associated with taking a pharmacy calculations examination, assessment items were designed to be free of any pharmacy context. Results: The examination was designed to assess student performance in 13 key areas (listed in the ‘Content of Work’ section). For the 174 students who took the examination, the mean score was 77.36% ±t 11.04% (SD). Students with an overall score below 70% (37 of 174 students who took the exam) were considered to be “at risk,” in that their calculations skills
may pose a barrier to progression through the RUSOP curriculum. 

Implications: Benchmark results were reviewed during individual meetings between students and their advisors. In an effort to serve students who needed more help in certain content areas, an additional voluntary calculations program was initiated. This program is the subject of a separate report.

Development, Implementation and Evaluation of a Pharmaceutical Biotechnology Elective Course in Hybrid Format. Parag Budukh, St. John Fisher College, Christine R. Birnie, St. John Fisher College. Objectives: An elective course addressing the broad scope of pharmaceutical biotechnology was offered in hybrid format. The course was evaluated in an effort to improve content and format for future offerings. Method: A two-credit elective course was developed to introduce professional pharmacy students to various aspects of biopharmaceuticals. The hybrid format involved approximately 60% in-class activities and 40% online activities. Student performance was evaluated based on class attendance and participation, completion of online quizzes, an online final examination and group projects. A standard end of the semester course evaluation was administered through E-Value online system. A supplemental in-class survey was conducted seeking feedback regarding the course content and format. Results: Nineteen students successfully completed the course. Eighteen (94.7%) students demonstrated very high understanding of the material as evident by their course grades (A). Majority of respondents (n = 19) agreed or strongly agreed (6.21 out of 7 on a Likert scale) that the assignments and projects helped their understanding of the course content. The supplemental survey results indicated that 93.75% (n = 16) respondents strongly agreed that the hybrid format was appropriate for the course. Implications: It is important that future pharmacists understand the unique properties of biopharmaceutical drugs and their impact on manufacturing, use and handling of drug products. An elective course introducing these various aspects would be a good addition to the pharmacy curriculum. Teaching the course in hybrid and possibly in completely online format would help students learn at their own pace reducing the in-class time burden.

Drug-Herb Interactions of the Top 200 Prescribed Drugs. Melanie A. Jordan, Midwestern University’s College of Pharmacy-Glendale, Seher A. Khan, Lake Erie College of Osteopathic Medicine. Objectives: The objective of this study is to provide a comprehensive, evidence-based review of potential herb-drug interactions for the Top 200 dispensed drugs. Method: Using the most recent version of the Top 200 List (2010) published by Pharmacy Times, a comprehensive review of herb-drug interactions was performed. All drugs were searched for potential herb-drug interactions by generic name using the online references Natural Standard, Natural Medicines Comprehensive Database and MDConsult between October and November 2011. Additional searches in PubMed were performed using the generic name and keywords herb(al) and interaction. Interactions with vitamins, minerals and other non-herbal supplements were excluded. The likelihood of herb-drug interactions was assessed using the DIPS scale (Horn et al., 2007). Results: Multiple drug-herb interactions were found within the Top 200 drugs. The most common potential interacting herbs (percentage of generic ingredients cited the interaction) were St. John’s Wort (Hypericum perforatum) (39%), Ephedra sinica (27%), Kava kava (Piper methysticum) (17%), garlic (Allium sativa) (16%), Echinacea (15%), grapefruit juice (15%), Ginseng (various species) (14%), ginger (Zingiber officinale) (14%), Valerian officinalis (13%), Ginkgo biloba (11%), Hawthorn (Crataegus) (11%), and red yeast rice (11%). Data are presented by therapeutic category. Implications: Although herb-drug interactions for specific disease states and/or drug classes are frequently published in the literature, a single, comprehensive review of herbal interactions with the most commonly dispensed medications is lacking. This research will provide a complete and simplified summary of herb-drug interactions which will be highly useful to all medical practitioners when counseling patients on potential adverse effects and interactions.

Evaluating Pharmaceutical Calculation Errors within an Introductory Pharmacy Course. Susan Jacobson, Massachusetts College of Pharmacy and Health Sciences-Boston, Eman Atef, Massachusetts College of Pharmacy and Health Sciences-Boston. Objectives: To improve students’ accuracy and accountability in performing pharmaceutical calculations by implementing a medication error reporting mechanism to a classroom quiz and to determine if the current teaching methods are effective in decreasing medication calculation errors. Method: Utilizing classroom clicker technology a total of five quizzes (10 calculations total) were administered to PharmD students enrolled in a two-semester pharmaceutics course sequence. Calculation topics included drug dosing, aliquots, milliequivalents, intravenous drip rates, chemotherapy dosing, and total parenteral nutrition. Quiz answers were documented using clickers and results were shared in real time with the class. Using a medication error reporting instrument students documented whether they responded correctly or listed the reason why their answer was incorrect. Students also documented potential patient negative outcomes of calculation errors. A short survey was included in the course evaluation. Descriptive statistics was used for the analysis of the data collected. Results: An average of 80% (n = 316) of the class participated in each quiz. The percentage of the students who calculated correctly ranged from 35 to 83.6%. Highest reported contributing factors to errors included calculator errors (range 16-56%) and needing more time (range 16-44.7%). Students agreed in the survey (4-4.3 on a scale of 5) that the quizzes enhanced their knowledge about the consequences of medication calculation errors and their responsibility for the accuracy of calculations. Implications: Instructors can identify areas to improve and implement sufficient instruction methods to continuously improve student accuracy, confidence and competence in performing pharmacy calculations.

Improvement of PharmD Students’ Performance in a Biopharmaceutics and Pharmacokinetics Course using Simulation Software. Amusa Adebayo, Roosevelt University, Ravikiran Panakantis, Roosevelt University, Ruth Adewuya, Roosevelt University, Christianah M. Adeyeye, Roosevelt University. Objectives: To assess the preliminary impact of simulation software (GastroPlus, Simulations Plus, Inc., USA) and WinNonlin (Pharsight Corporation, USA) on students’ performance in Biopharmaceutics and Pharmacokinetics course in a Pharm. D. curriculum. Method: A retrospective, post-hoc examination of students’ assessment data on the course was done using non-parametric matched samples hypothesis testing. Students’ performances in assignments, cohort group presentations, mid-term and final examinations were compared with performances in the weekly simulation laboratory exercises. Significance of any difference among assessments was determined at 95% confidence level using the Wilcoxon matched-pairs test. Descriptive statistics was used for the analysis of the data collected. Results: Class average in assignments (80.3% ± 8.7%) and exams (73.6% ± 7.0%) were generally poorer than simulation laboratory averages of 85% ± 6.4% (at 95% CI, critical t = 2.0, df=65). On the other hand, students’ performance in cohort group presentations was much higher than in the simulation laboratory, assignments and examinations. Implications: It appears that the students learned better with the hands-on simulation exercises and in this course they showed a consistent improvement in performance on a weekly basis. Similarly, students performed better on their group...
In Vitro and In Vivo Evaluation of Capsules Containing Coated Isoniazid-Rifampicin Combination. Mohsen A. Hedaya, Kuwait University, Mohammed M. Osman, Tanta University, Egypt, Ahmad Donia, Tanta University, Esmat Zein-Eldin, Tanta University. 

Objectives: This study was conducted to evaluate if enteric coating of isoniazid can prevent its interaction with rifampicin in anti-tuberculosis FDC containing both drugs. Method: Investigations with different polymers at different ratios showed that isoniazid coated with Eudragit L100 (1:2) has the lowest dissolution rate in acidic medium and the highest dissolution rate in alkaline medium. Capsules filled with rifampicin alone, rifampicin-isoniazid physical mixture and rifampicin-coated isoniazid were used for stability testing, and for determination of rifampicin dissolution rate and percentage dissolved at pH 1, 3, and 7.4, and rifampicin relative bioavailability after single administration in 12 healthy human volunteers. Results: Accelerated stability study at 40±2°C/75% RH±5% RH for 3 months and long-term stability for 12 months showed less than 3% degradation indicating minimal interaction between rifampicin and isoniazid in the dosage form. Rifampicin percent dissolved in 120 minutes from capsules containing rifampicin alone, rifampicin-isoniazid physical mixture, and rifampicin-coated isoniazid were 98.01±1.77, 64.20±7.34, and 95.69±9.31 at pH 1, 25.09±4.68, 15.06±5.85, and 39.71±1.78 at pH 3.0, and 26.47±0.65, 27.74±1.41, and 30.53±9.02 at pH 7.4. These suggest that isoniazid coating may prevent rifampicin-isoniazid interaction in the acidic medium of the stomach. Rifampicin bioavailability determined for rifampicin-isoniazid physical mixture and rifampicin-coated isoniazid mixture relative to rifampicin alone were 65.3%±6.56 and 97.3%±4.92, respectively as determined from rifampicin AUC calculated after single oral dose. This indicates that coating of isoniazid prevented its interaction with rifampicin in vivo. Implications: Isoniazid coating before mixing can be a useful strategy for preparing fixed-dose combinations containing rifampicin and isoniazid.

Lipidic Nanocarriers to Enhance Anticancer Pro-apoptotic Activity of Genistein. Tamer A. Elbayoumi, Midwestern University’s College of Pharmacy-Glendale, Vu Phan, Midwestern University, College of Osteopathic Medicine-Glendale, Jimmy T. Pham, Midwestern University, College of Osteopathic Medicine-Glendale. Objectives: Our work focuses on the development and evaluation of lipid-based nanocarriers (NCs), namely liposomes (LIPs), nano-emulsions (NEs) and polymeric phospholipid micelles (MICs), as vehicles for improved oral and parenteral delivery of genistein, the major soy isoflavone best known for its ability to markedly inhibit cancer progression, angiogenesis, and metastasis. Method: Prototype LIPs were prepared using egg phosphatidylcholine and Cholesterol (60-90:40-10 M%), mixed with increasing amount of genistein, via modified lipid-hydration technique. Polymeric MICs with different ratios of vitamin E-TPGS and PEG2000-phosphatidylethanolamine (PEG-PE) were stirred with genistein in acetone/methanol mixture, followed by solvent evaporation. Tocopherol-rich NE, were prepared by ultra-sonication. Physico-chemically-screened LIPs, NEs and MICs loaded with genistein were tested in vitro against murine breast carcinoma (4T1), human prostate carcinoma (PC3), and resilient colon cancer (C26). Results: Genistein-loaded vesicles showed high drug solubilization capacity (NE>MIC>LIP) and favorable nano-scale properties, leading to improved delivery of genistein, and superior cytotoxicity in cancers of different origins. Significant induction of morphological apoptosis in 4T1 with genistein-loaded LIP, was evident microscopically, compared to free drug and empty vehicle controls. Superior cytotoxicity was demonstrated for genistein MIC and NE, against 4T1, C26 and PC3 cancer cells, vs. treatment controls. IC50 values for genistein NCs were at least 6-15 folds < conventional drug solution. Implications: Genistein-loaded NCs showed high solubilization capacity and favorable nano-scale properties, leading to improved delivery of genistein to various cancer cells. These genistein NCs can lead to therapeutic strategies using this potent pro-apoptotic nutraceutical, as active adjuvant to augment current cancer chemotherapeutics.

Milestone Exam Performance – A Tool for Measuring Students’ Competence Progression. Quamrun N. Masuda, Appalachian College of Pharmacy, C. Randy Mullins, Appalachian College of Pharmacy. Objectives: To assess students’ learning outcome based competencies in the light of scholastic aptitudes, progression and retention of knowledge, skills, and professionalism. Method: ACP has designed multi-component milestone exam that measures students’ competence at didactic level as they progress through the curriculum. Performance reflects attainment and progression of focused skills. This tool yields a comprehensive understanding of the success or deficiency of ACP curriculum in facilitating students’ learning in the hierarchical manner. This exam is composed of: (i) MCQ, (ii) A scenario based OSCE session with 3 activities: (a) a non-interactive session of critical thinking and writing, (b) an interactive SPA to counsel a patient, and (c) an interactive station to call a physician to discuss about errors, omissions, and therapeutic concerns. (iii) A compounding lab session to: (a) compound and (b) solve a complex scenario based calculation problem, and (c) identify errors and omissions and therapeutic concerns in a prescription and document interventions. Results: Analysis of the milestone exam performance over the last 3 years has revealed that overall performance is satisfactory, with 91% of students meeting the minimum competency level across the exam for the P1 class and 89% for the P2 class. In 2011, a milestone exam was given to the P3 class prior to graduation for the first time with 88% of the class meeting the required minimum competence. Implications: This holistic approach allowed ACP to be in compliance with PharmD curriculum standards set forth by ACPE.

Neuropathic Pain Management Compounding: Current Delivery Systems, Technology, and Therapeutic Effects. Uyen Le, Sullivan University, Jenny Park, Sullivan University, Huong Nguyen, Sullivan University, Lien Nguyen, Sullivan University, Maria Lourdes Ceballos-Coranel, Sullivan University, Hieu T. Tran, Sullivan University. Objectives: An estimated 0.6-1.5% of the U.S. population is affected by neuropathic pain as reported by the American Academy of Pain Management. Currently, neuropathic pain management involves drug combination therapy. Compounding pharmacy plays a key role in meeting the demand for an increasing need for individualized and easily accessible drug preparations. To date, information about neuropathic pain drug compounding is presented as limited number of case studies. Our goal is to provide a comprehensive report about currently compounded neuropathic pain drugs, their delivery system, compounding technology, and therapeutic effects. Method: A survey was sent to accredited compounding pharmacies followed by a comprehensive literature review. A collection of various formulations, technology, and information relating to neuropathic pain drugs was obtained from our survey, websites of accredited compounding pharmacies, and the International Journal of Pharmaceutical Compounding. Analysis of the therapeutic effects of neuropathic pain drugs were obtained from PubMed. Results: More than 20 compounding pharmacies participated...
in our survey. Approximately 125 compounding pharmacy’s websites and more than 100 articles were reviewed for data base information. Data was gathered on the percentage of monthly prescribed neuropathic pain compounding, the list of medications, the nature of drug combinations, treatment guideline, cost, insurance coverage, dosage forms, excipients, preservatives, quality control, compounding technology, and therapeutic effects. Implications: The study provides the most current systemic information on neuropathic pain management compounding. Information obtained from the study is highly beneficial for compounding pharmacists and prescribers as they aim to improve existing therapy, protocol, and compounding methods for neuropathic pain.

Personal Impact of a Service-Learning Medical Missions Elective Course on Pharmacy Student’s Attitudes and Values. Christine R. Birnie, St. John Fisher College, Sherry A. Jimenez, St. John Fisher College. Objectives: A service-learning elective course on medical missions was developed to equip students with the knowledge and skills necessary to participate in a domestic or international medical mission trip or service project. The course was evaluated to examine the impact of the elective on pharmacy students’ perceptions of and attitudes towards poverty, cross-cultural issues and the health concerns of underserved populations. Method: To assess personal impact, students were asked to write two reflection papers at the completion of the course: one reflecting on their service project experience, and the second on the how the course as a whole affected them personally. Content analysis was performed on the reflective papers to identify themes. Results: Thirty-one students successfully completed the course and the required reflections. Content analysis of both sets of reflection papers revealed the following emergent themes: an improved awareness of global poverty, the underserved and volunteer opportunities; a continued commitment to serve either locally or through participation in an international medical mission trip; and a greater appreciation of other cultures. Implications: The addition of service-learning courses related to medical missions into pharmacy curriculums may aid in the development of student’s understanding and attitudes towards the diverse populations they will serve, both locally and globally.

PharmaDASH(TM): An Interactive Game of Drug Development and Approval Process for IPS Workshop. HaiAn Zheng, Albany College of Pharmacy and Health Sciences, Rachel Sussman, Albany College of Pharmacy and Health Sciences, Rachel Smith, Albany College of Pharmacy and Health Sciences, Francelyse Leveille, Albany College of Pharmacy and Health Sciences, Ryan Watson, Albany College of Pharmacy and Health Sciences, Gail Goodman-Snitkoff, Albany College of Pharmacy and Health Sciences. Objectives: The process of drug development and approval is a central paradigm for the pharmaceutical industry, and is an important topic for courses such as Pharmaceutics. We developed, refined and accessed an educational game to mimic this process to enhance the learning. Method: This PharmaDASH game was designed with a set of rules, a question bank, a game board, and a score sheet. Mimicking the stages of drug discovery, preclinical, clinical phase 1, 2, 3, marketing, and milestones in between, the participants advance through these stages and gain (or lose) “money” by answering questions or taking risks. In addition, R&D expenses are paid at milestone steps from participants’ “accounts”. A participant can win by completing all steps of the process or by obtaining the most “money”. The game has been used in Interdisciplinary Problem Solving (IPS) Workshop for four years and assessments were conducted by surveying the students both individually and by their workshop group. Results: The game has been refined based on students’ feedbacks each year, including shortening the time to completion and ease of play. The students viewed the game as a way to appreciate the rationales, strategies, time frames, economics, risks and rewards of drug development. After improvements, the assessment showed enhanced and increased student engagement and interest. Implications: The game can be utilized for pharmacy, healthcare, scientific education or professional training, and tailored to different levels for general education and entertainment. The game can also be revised to accommodate different group settings, time frames, and versions, including a computer game format.

Polymorphisms in Folate Pathway Genes and Response to Methotrexate Treatment in Rheumatoid Arthritis. Jun Liang, University of South Florida, Xiao Chen, Sun Yat-sen University, Shufeng Zhou, University of South Florida. Objectives: Rheumatoid arthritis (RA) is a chronic systemic autoimmune disease that involves the inflammation of multiple joints. In this study, we aimed to study the impact of SNPs in folate pathway-related genes including RFC1, FPGS, GGH, MDR1 and MTHFR to MTX response in RA patients. Method: A total of 113 Chinese RA patients were recruited, and categorized into good and poor respondents to MTX based on disease activity score. A patient was classified as a good responder when both the tender joint count and the swollen joint count were ≥20% improved from baseline after at least three months therapy and at least three of the following criteria were met: visual analog scale (VAS) < 20 mm, ≥20% improvement in ESR, in physician’s global assessment of disease activity, in patient’s global assessment of disease activity, and in the health assessment questionnaire (HAQ). A total of 6 SNPs from the above five genes were genotyped and tested for association with MTX response using x2 test, logistic regression along with clinical variables, and gene-gene interaction analysis using multifactor dimensionality reduction. Results: The probability of remission of RA symptoms was about 1.4-fold higher in carriers of the MDR1 3435TT genotype as compared to patients with the 3435CT genotype (P = 0.020; OR = 1.368; 95% CI = 1.160−1.614). There was a likely interaction between SNPs in the RFC1 and MTHFR genes. Implications: The results from the present study suggest that the polymorphism of MDR1 3435C>T may influence the efficacy of RA therapy with MTX in Chinese RA patients.

Pre-pharmacy Requirements Towards Successful Completion of a Basic Pharmaceutics Course. Seher A. Khan, Lake Erie College of Osteopathic Medicine, Somnath Singh, Creighton University. Objectives: A major goal of this study was to examine students’ perception and opinion on what pre-pharmacy science courses prepared them to successfully complete a 3-credit basic pharmacutes course at Creighton University School of Pharmacy. Questions were also asked to identify topics they considered most or least difficult to comprehend and learn. Method: On the last week of classes, an online anonymous survey was administered to the first year pharmacy students who were enrolled in a 3-credit course on physicochemical basis of drug actions-PHA 317. Responses were collected and data compiled utilizing the Blue Q software. Results: The survey resulted in 141 responses (95%). Sixty two percent respondents strongly agreed that general chemistry courses were helpful in understanding the concepts and information presented in the pharmacutes course (Likert scale 1-5; 1 = strongly disagree; 5 = strongly agreed). Averaged responses on the importance of biology and organic chemistry courses were 3.64 and 3.55, respectively. Only 7% respondents strongly rated prior knowledge of calculus to be important. Difficult topics rated by the students were complexation and protein binding (18.7%), drug interactions and incompatibilities (12.9%), and buffered and isotonic solutions (11.5%). The least difficult topics rated were composition of matter (28%) and extraction of drug molecules (19%). Implications: First year
Pharmacy students accurately assessed the importance of general chemistry prerequisites necessary for understanding and successful completion of the basic pharmaceutics course. Based on the findings of this study, additional time and efforts have been allocated within and outside classroom to help students grasp difficult materials.

Professionalism in Evaluating Oral Presentations. Seher A. Khan, Lake Erie College of Osteopathic Medicine, Somnath Singh, Creighton University. Objectives: To develop and enhance student awareness and interest on peer-evaluation as a learning tool. Method: In “Pharmacogenomics in Disease Management” elective offered at Creighton University, pharmacy students are required to give a 15-minute oral presentation on a pre-assigned topic. Although each presentation was graded solely by the course instructor, the students enrolled in the course were also asked to provide anonymous feedback of each presentation voluntarily using an online program. An 8-item rubric was used to provide a qualitative and quantitative assessment of the presentation. Peer evaluations were compared statistically with those of the instructor.

Results: Eighty-seven percent of students enrolled in the course voluntarily participated in the peer evaluation process and provided their feedback. Interestingly, faculty scores did not differ significantly with those of peers (p<0.05). This suggests that students provided unbiased and constructive evaluations of their peers’ presentations. The anonymous survey tool, in future, may serve as a quick and objective method to grade students’ oral presentation. Implications: Peer evaluation can imbibe a sense of engagement in student learning and nurture professionalism by being able to critically review work of fellow pharmacy students.

Quality Assurance for Compounded Products. Shelley L. Chambers-Fox, Washington State University; Patricia L. Ager, Washington State University. Objectives: Errors in compounding have tremendous potential to harm patients. In order to develop good weighing and measuring skills, pharmacy students enrolled in the compounding laboratory need rapid, quantitative feedback about their technique. Method: In the first unit of the course students must demonstrate the ability to prepare dilutions of Allura Red in water and in lactose within ±10% of the labeled value using standard compounding equipment. The dilutions are quantified using visible light in a Synergy 96 well Microplate Reader (Bio-Tek Instruments). In addition, capsules, suppositories, troches, suspensions and nasal solutions are evaluated using simple, quantitative methods. Results: When provided with quantitative feedback about their products students were able to improve from 40.2% of liquid dilutions out of specification to 2.7% of nose drop products out of specification as they moved through the semester. Implications: The magnitude of the compounding error observed is sobering in light of the potential harm to the patient of an over- or under-dose of medication.

Rapid Screening of Potential Drug-drug Interaction at the CYP1A2, 2C9, 2D6, and 3A4 level. Zhixin Wang, University of South Florida, JiaZhi Sun, University of South Florida, Jun Liang, University of South Florida, Kevin B. Snead, University of South Florida, Shufeng Zhou, University of South Florida. Objectives: Cytochrome P450s (CYPs) are a large group of enzymes and responsible for most of the phase 1 drug metabolism. Drugs usually show remarkable inhibitory effects on various CYPs, raising the potential of drug-drug interactions. This study investigated the effect of two libraries of potential drug compounds (one library is Kinase Inhibitors (n = 80) and the other is Nuclear Receptor ligands (n = 80)) on human CYP1A2, 2D6, 2C9 and 3A4 and the structure-inhibitory activity relationship. Method: The inhibitory effect of these compounds on human CYPs was examined using high throughput screening kits with fluorescent probes as the model substrates. Selective inhibitors such as furafylline and quinidine were used as the positive controls. The SAR was studied using AutoDock and Discovery Studio software. Results: The compounds exhibited differential inhibitory effect on CYP1A2, 2D6, 2C9 and 3A4, while some of them showed activating effect on CYP2C9 and 3A4. For example, SP 600125 was a potent inhibitor for CYP1A2 with an IC50 of <1 μM, but enhanced the activity of CYP2C9 4-fold. Similar results were observed for GW 5074 and KN-62. Among all the 160 compounds, about 13% showed significant inhibition (IC50 ≤ 1 μM) to CYPs; others exhibited moderate to minor or negligible inhibitory effects to CYPs. About 3% of them inhibited two CYPs, e.g. KN-93 inhibited CYP 2D6 (IC50 ≤ 1 μM) and 3A4 (IC50 = 1 μM); apigenin inhibited CYP1A2 (IC50 = 1 μM) and 3A4 (IC50 = 1 μM). Our docking studies demonstrated the tight binding of these inhibitors to respective CYPs. Implications: The findings can be used to predict important drug interactions between these KIs and NRs, and other drugs that are extensively metabolized by CYPs.

Rheological Study, Characterization, and Drug Release of Compounded Gabapentin-containing Pluronic Organogels for Neuropathic Pain Management. Uyen Le, Sullivan University, Lap Tran, Sullivan University, Hanh Nguyen, Sullivan University, Huong Nguyen, Sullivan University, Lien Nguyen, Sullivan University, Minh Tran, Sullivan University, Hung-Phu Vuong, Sullivan University, Hieu T. Tran, Sullivan University. Objectives: Gabapentin-containing pluronic organogels (GB-PLO) have been widely used in various compounds for neuropathic pain management. However, there is still a lack of scientific data on formulations’ physicochemical properties, drug release, and their stability during the intended use period. Our goal is to comprehensively evaluate the rheology, characterization, and drug release of gabapentin from different compounded formulations of GB-PLO, thus confirming the stability of the preparations. Method: Eight typical formulations of compounded GB-PLO that contain gabapentin alone or gabapentin in combination with other drugs, such as gabapentin-baclofen-amitriptyline-ketoprofen, gabapentin-baclofen-amitriptyline, gabapentin-baclofen-ketoprofen, gabapentin-amitriptyline-ketoprofen, gabapentin-ketoprofen, gabapentin-baclofen, and gabapentin-amitriptyline were prepared using cold incorporation method. Organoleptic properties, pH values, microscopic structure, rheology, and gelation temperature were studied at 1, 7, and 14 days after preparation. The release of gabapentin out of pluronic organogel (PLO) was measured by diffusion across cellulose membranes (0.45 μm) in the Franz diffusion cell system. Results: The organoleptic properties were constant during the stability study in all formulations. Values of pH are various dependent on formulations and slightly increased after the 7th day. Microscopic structure showed that the number of drugs combined in formulations influenced the particle size and shape during the storage time. Similarly, gelation temperature, rheology, and drug release of gabapentin out of PLO were remarkably dependent on the nature of combination in formulations during the time of assay. Implications: Formulations of PLO containing only gabapentin or gabapentin with another drug was stable during 14 days. However, 3- and 4-combined drug formulations demonstrated an altered pseudo-plastic behavior and instability during the study period.

Student Perceptions of Helpfulness of Pre-professional Math and Science Courses in Understanding Pharmacy Coursework. Stephanie A. Stoneham, St. John Fisher College, Parag Budalkh, St. John Fisher College, Jane M. Souza, St. John Fisher College. Objectives: The purpose of study was to examine student perceptions about the helpfulness of the math and science courses taken prior to entering the Doctor of Pharmacy Program at Wegmans School of Pharmacy.
Method: A Qualtrics survey was administered to current pharmacy students posing questions regarding: 1) math and science courses taken prior to entering pharmacy school; 2) student perceptions of the value of those courses in their understanding of current pharmacy coursework; and 3) their opinions of what additional pre-professional math and science courses would have been helpful in their current coursework. Results: 301 students were surveyed with a response rate of 51.2%. Sixty-five percent of the respondents had at least three years of post-secondary education. Students rated 11 biology courses as helpful to very helpful. While all chemistry courses were perceived helpful, Organic Chemistry and General Chemistry had the highest perceived helpfulness. Of the math and other science courses, only Biostatistics and Statistics were perceived to be significantly helpful in their understanding of course material in the PharmD program. The top five courses students believe would have improved their understanding of the pharmacy curriculum were Immunology, Pharmacology, Anatomy, Biochemistry, and Microbiology. Implications: Student perceptions regarding the helpfulness of pre-professional math and science courses suggests the need for pharmacy schools to be more specific about the prerequisite science courses for the PharmD program.

The Use of Concept Mapping to Enhance Learning in A Didactic Pharmaceutics Course. Rajesh Vadlapatla, Saint Joseph College, Yingnan Zhao, Saint Joseph College, Diane F. Pacitti, Saint Joseph College. Objectives: To incorporate a concept mapping summative assignment as an active learning strategy, requiring higher order thinking skills, into a didactic pharmaceutics course, in order to provide an enhanced learning experience. Method: On the first day of a four-credit pharmaceutics course, 67 students were given a summative assignment to be completed by the last week of the course. The assignment was to create a concept map relating the various physicochemical properties of dosage form components to the characteristics present in the final dosage form—one by the individual student, and one by a (6-7 members) group. An ideal concept map requires a student (or group) to apply provided course content, by analyzing the interrelationships of physicochemical properties, formulation factors, and explicit requirements of a specific dosage form. The concept maps were evaluated using a faculty-constructed rubric. Students’ valuations of the assignment were collected through an anonymous survey. Results: By the end of the course each student successfully completed the concept mapping assignment. 46 (69%) students completed the survey. Overall, students rated the use of concept mapping improved their understanding of the course material. Implications: The use of concept map assignment, allowing student to visualize how different properties of individual dosage forms are related, is a useful tool for the presentation and learning of instructional concepts in a pharmaceutics class. Such assignments enhance critical thinking skills, and lead to a better understanding of conceptual course content. Concept mapping may benefit the teaching and learning experiences in other didactic, content-heavy courses.

Use and Efficacy of Proficiency Exams in a Doctor of Pharmacy Program. Donald A. Godwin, The University of New Mexico, Krystal McCutchen, The University of New Mexico. Objectives: To examine use of proficiency exams, including frequency of student attempts, success rates and implications related to progression/graduations rates. Method: Proficiency exams were offered as a continuing assessment for students who did not achieve competency in a course. If students achieved a passing score on a proficiency exam, a grade of C was assigned for the course, with the original grade being assigned if the student failed the exam. Student data was separated by the number of exams attempted (1, 2-3, 4-5, or 6+) and overall passing rates. Additionally, on time graduation/progression rates were calculated. Results: 54 students attempted at least one proficiency exam over the last six years. 29 of these students attempted one exam with a 55.2% success rate; these students have a 97% on time graduation/progression rate. Students who attempted 2-3 exams (16 students), 4-5 exams (5 students), or 6+ exams (4 students) had pass rates of 53.8%, 36.4%, and 70.4%, respectively. These same groups have on time graduation/progression rates of 50%, 0%, and 50%. Implications: The proficiency exam program was originally implemented to assist the student who had a single episode of academic difficulty and has proven successful for that group of students. As students required more proficiency exams, their success rate and graduation/progression rates declined. Surprisingly, a group of students emerged who took 6 or more exams and demonstrated a high success rate on exams and higher than expected graduation/progression rates.

Theoretical Models

Integrated Case Studies as Flexible Pedagogical Tool to Facilitate Curricular and Conceptual Integration. William C. Mobley, University of Florida. Objectives: To develop a method for conceptually integrating the pharmacy curriculum, while maintaining the current curricular structure. Method: A stand-alone integrated case studies (ICS) course was created to help students develop an understanding of how insights from different curricular disciplines can illuminate and inform an integrated understanding of the patient and of patient care. Harden described an “integration ladder”, where curricular integration can range from isolated knowledge acquisition to learning in a manner that transcends individual disciplines. The ICS course can be classified as a correlation approach - where disciplines are taught separately, but an additional course is introduced to “[integrate] areas of interest common to each of the subjects”. Patient cases are written, after an analysis of course syllabi, to include multiple concurrently taught curricular concepts. For example, a case of diabetic ketoacidosis was written to incorporate concepts from pathophysiology, biochemistry, microbiology, and dosage forms. Results: Students employ various tools of integration, including PowerPoint presentations, concept mapping, practical exercises, Jeopardy games, and create-a-patient exercises. The course has evolved to now include patient care mapping and SOAP note writing as clinical reasoning tools that integrate curricular concepts with patient care and that extend the course to now include interprofessional insight integration. Implications: The ICS curricular integration approach, now in it’s 9th year, leaves existing courses free to explore their own pedagogical improvements, while functioning as a flexible backbone to integrate their major concepts to help the student achieve a comprehensive understanding of patients and patient care, and helping them reach the synthesis level of Bloom’s Taxonomy.

Learning Experiences and Outcomes for Compounding Laboratory Pharm D students: Hands on Experiences a Student’s Favorite. Srinivas M. Tipparaju, University of South Florida, Yashwant V. Pathak, University of South Florida. Objectives: The compounding laboratory utilized state-of-the-art facilities for student learning experiences. We used a combination of traditional approaches combined with transformative ideas to teach this course. One of the exciting ideas that we utilized was the use of case studies, quizzes, independent and group work. The overall goal was to give students a sense of real life experience with independence and sense of responsibility. Method: An independent assessment was conducted to evaluate the learning outcomes in the compounding laboratory setup. Data collection and
student participation was blinded. In this course students prepared liquid and semi-solid drug delivery systems. A survey was conducted for analyzing student responses with the idea to enhance student learning outcomes and experiences, a set of 10 open ended questions with additional space for comments and feedback. **Results:** We received response from 20 students in different areas. The hands-on experience was rated at a significantly high level (58%). The idea of applying learned principles from class room based activity to laboratory activity also received exceptional success with as astonishing 90% approval from students. The results demonstrate that the use of case studies was useful for understanding however we found that there were significant number of students who want to have this as group activity as opposed to individual activity. Students felt the need for preparation before the laboratory activity for solving compounding case studies. **Implications:** Data analysis shows that compounding laboratory activity achieved all its goals at highest level with the central objective for application of learned principles from classroom to laboratory.

**Repositioning of the FDA-approved Tyrosine Kinase Inhibitors.** Jiazhi Sun, University of South Florida, Lun Yang, MingHua Li, University of South Florida, Zhixin Wang, University of South Florida, Elsa Wright, University of South Florida, Caitlin Howell, University of South Florida, Angela Wang, University of South Florida, Amy Haynes, University of South Florida, Yu Fu, University of South Florida, Danielle Vachon, University of South Florida, Kevin B. Sneed, University of South Florida, Lin He, University of South Florida, Shufeng Zhou, University of South Florida. **Objectives:** Drug repositioning represents a fast, economic and effective approach in drug discovery. Our goal is to reposition FDA-approval tyrosine kinase inhibitors (TKIs) to target metabolic disorder. **Method:** Using a complex docking approach with our established chemical-protein interactome (CPI) and FDA-approved TKIs, we have identified 301 PDB-deposited proteins corresponding to 353 ligand binding pockets among a total of 1,780 PDB-deposited human protein entries. Validation the novel target(s) in vitro and test efficacy in vivo has been studied in the laboratory. **Results:** Sorafenib and dasatinib had a CPI binding score (ZZ_score) of -1.2903 and -1.0278 against histone deacetylase 7A, respectively. In addition, both TKIs achieved high ZZ scores against B-Raf and VDR and PPAR, suggesting a high binding affinity of sorafenib and dasatinib with these proteins. Our preliminary studies have shown that both acetylated-lysine in alpha-tubulin and oncogenic Raf-signaling were inhibited significantly by those two TKIs in human B-Raf (V600E) multiple melanoma cells. Further validation of additional “hot targets” besides tyrosine kinase such as HDAC, B-Raf, PPAR, and VDR, and in vivo evaluation of anti-metabolic disorder by TKIs are undergoing at our laboratory. **Implications:** FDA-approved TKIs may be repositioned to become a “magic bullet” concurrently targeting tyrosine kinase, HDAC, PPAR, VDR and B-Raf, shedding a light for future broad-spectrum anti-cancer drug and anti-metabolic disorder drug development. We hypothesize that these TKIs act on other molecular targets in addition to tyrosine kinases and may manage metabolic disorder.

**PHARMACY PRACTICE**

**Completed Research**

A Health in Literature Elective for Doctor of Pharmacy Students. Ann Zweber, Oregon State University. **Objectives:** The Health in Literature elective requires students to: Develop an understanding and appreciation of historic and present health care issues and how they impact pharmacy practice and the profession’s future; Recognize and understand divergent perspectives on health care. Discuss how understanding can be utilized to facilitate informed and constructive discussion; Recognize implications of issues in health care for pharmacy practice and pharmacists’ ability to meet patient care needs; Develop a lifelong interest and appreciation in literature as source to illustrate and highlight challenges in health care and patient care. **Method:** A 1-credit Health in Literature elective course was established in the Fall of 2009. Enrollment is limited to 12 students, and is available to P1, P2 and P3 students. Themes and books are assigned for each term, often corresponding to subjects covered in concurrent courses. Term themes have included: mental illness; epidemiology; drug discovery; end of life; culture and health. Discussion questions are posted on Blackboard a week before meeting times. All students are expected to participate in discussion and write a review or comparative paper on assigned books. **Results:** Course evaluations over 8 terms indicate a high level of agreement with achievement of course objectives. Student comments are overwhelmingly positive. **Implications:** Literature can assist students in their personal and professional development by encouraging in-depth exploration of various aspects of health care issues. Discussions serve to stimulate and challenge thoughts and perspectives. Books lists and discussion questions will be available at the poster session.

A Multidisciplinary Educational Series to Help Older Adults Find Reliable Online Health Information. Monina R. Lahoz, Massachusetts College of Pharmacy and Health Sciences-Worcester, Fac Gwen Wooding, Massachusetts College of Pharmacy and Health Sciences-Worcester, Paula J. Evans, Massachusetts College of Pharmacy and Health Sciences-Worcester, Irena Bond, Massachusetts College of Pharmacy and Health Sciences-Worcester, Nina Pang, Massachusetts College of Pharmacy and Health Sciences-Worcester. **Objectives:** Teaching older adults how to find reliable online health information is one strategy for helping them manage their health and avoid health fraud. Project objectives: To increase older adults’ (1) awareness of reliable health information websites such as MedlinePlus, and (2) skills in evaluating health information websites using a 9-item checklist. **Method:** Four faculty members, a fellow and 10 APPE students from the MCPHS School of Pharmacy-Worcester/Manchester used a mobile computer classroom (five 17” laptops) to present a 3-lesson series developed by the NIH National Institute on Aging program (1-Introduction to MedlinePlus, 2-MedlinePlus Drugs and Supplements, 3-Evaluating Health Websites) at 4 local senior centers. Pre- and post-lesson surveys were administered to assess the impact of each lesson and entire program. Participants who completed the 3-lesson series received a certificate and a $30 gift card. **Results:** There were 33, 37, and 30 participants in Lessons 1, 2, and 3, respectively. Twenty-two participants completed the 3-lesson series. Some notable results include: (1) 77.8% of Lesson 1 respondents have never heard of MedlinePlus, (2) 100% of all lesson respondents found MedlinePlus to be a useful source of health information, (3) 95.5% of Lesson 3 respondents were more confident in their ability to evaluate health websites, and (4) over 90% of all lesson respondents were likely to use MedlinePlus when searching for health information. **Implications:** This project empowers older adults and serves as a model for an APPE elective rotation (community outreach). A follow-up of participants is planned to assess the long-term impact of this project.

A Simulation Project to Assess Students Ability and Perception of Adhering to a Medication Regimen. Timothy R. Ulibrich, Northeast Ohio Medical University, David Hamer, Kristen Lehotsky. **Objectives:** To determine perceived versus actual difficulty amongst pharmacy
students in adhering to a complex medication regimen. **Method:** All 2nd year pharmacy students (n = 72) were invited to participate in the study. A pre-survey was administered to students to assess how difficult and successful they thought they would be in adhering to a complex medication regimen. Students were then given 6 fictitious medications to take for 6 days with various directions (e.g. once daily, with food, etc.) Following the completion of the 6-day medication regimen, students turned in their medications, completed a post survey and the principal investigator led a short informal discussion. **Results:** Sixty-nine students (96%) completed both the pre and post survey. Students missed on average 16% of all doses. Compared to the pre-survey, students reported on the post-survey a greater difficulty and lower ability than anticipated in adhering to a complex medication regimen. The mean number of day’s students anticipated to miss at least 1 dose of a medication (pre-survey) was 2.3 days. The actual number of days where at least 1 dose was omitted was 3.1 (indicated by the post-survey). Eighty-nine percent of students agreed or strongly agreed the project was valuable in developing empathy towards patients taking complex medication regimens. **Implications:** Non-adherence was prevalent amongst study participants. Therefore, finding meaningful ways to integrate adherence into the curriculum is essential.

**A Comparison of Grading Rubrics for Professional Seminars Given by Doctor of Pharmacy Candidates.** Dana G. Carroll, Auburn University, Sharon K. McDonough, Auburn University, Anne Marie Liles, Auburn University, Jessica A. Starr, Auburn University, Miranda R. Andrus, Auburn University, T. Lynn Stevenson, Auburn University. **Objectives:** To compare a numeric grade-based rubric, previously developed by the Auburn University Harrison School of Pharmacy for assessing fourth-year Doctor of Pharmacy student professional seminar presentations, to a newly developed pass/fail rubric. **Method:** A research group was assembled for this study which consisted of 5 faculty members and the Director of Teaching, Learning and Assessment. The research group reviewed a random sampling of 25% (n=32) of the 2011 graduating class’s seminar presentations using the newly developed pass/fail rubric. Of those selected, the seminar presentation was viewed via digital or DVD recordings and graded by three members of the research group. These assessments were then compared to the actual grade received with the old, numeric-based rubric in 2010-2011. The Wilcoxon matched-pairs signed-ranks test for paired comparisons was employed to compare the scores with the old and new grading rubrics. **Results:** None of the students in the sample failed the professional seminar with utilization of the old, numeric-based rubric. However, the failure rate increased significantly (65.6% [n=21], p<0.000) with utilization of the new pass/fail rubric. Overall, the strongest performance categories with the new rubric were Delivery (34% received Highest Distinction and 6% failed) and Printed the strongest performance categories with the new rubric were Del.

**Implications:** Utilization of the new pass/fail rubric provides a more rigorous system of grading student presentations than the old numeric-based rubric.

**A Randomized Priming Study in Asthma Management Among 3rd-year PharmD Students.** Michael J. Peeters, The University of Toledo, Kimberly A. Schmude, The University of Toledo. **Objectives:** Priming is a teaching method where students are given a quiz before instruction, in an effort to help students understand what is important and what they may not already know. It is meant to highlight specific “take-home points” through specific test questions asked. Literature of effectiveness in this area is very limited. This study’s objective was to evaluate the impact of priming on retention of knowledge related to asthma management. **Method:** Previously, a quiz had been developed to assess students’ knowledge of key items for a lab experience with asthma management (ie, asthma action plans & peak flow meters). This year, a third-year PharmD class was randomized into 2 groups. Group A completed a priming quiz before instruction while Group B did not. To investigate knowledge retention, both groups took the same quiz 5 months later. **Results:** For the retention quiz of 10 multiple-choice questions, the median score for Group A (n=46) was 70% with an interquartile range of 12.5%. The median score for Group B (n=56) was 60% with an interquartile range of 20%. The groups were not significantly different (Mann-Whitney U, p=0.110) with an effect size that was small-medium (Cohen’s d, 0.32). **Implications:** We found a statistically insignificant difference favoring priming over not, where effect size and practical significance seemed questionably low. Going forward, the effect of priming should be compared with other test-enhanced learning methods, but priming effects seem modest especially given the faculty effort and preparation needed.

**A Team-based “Unknown Drug” Project Linking Medicinal Chemistry, Pharmacology and Clinical Pharmacy.** David G. Fuentes, Roosevelt University, Sonali Kurup, Roosevelt University, Scott Benken, Roosevelt University. **Objectives:** To assign student teams one “unknown drug” to identify based on clinical data including basic vitals and observed adverse reactions, and a team report describing basic science and clinical elements of their unknown. **Method:** Student teams (n = 12) were each assigned one “unknown drug” and given a 13-item rubric outlining all expectations within a required course on the principles of drug action and the autonomic nervous system. Teams were given graphs and tables depicting adverse reactions to identify the “unknown drug” based solely on this data. Students were to use course material and related readings as references. **Results:** All teams synthesized a report and address key elements, including: summarizing the “unknown drug” data, describing search strategies; providing details linking drugs’ clinical effects to the principles of medicinal chemistry and pharmacology; and, reflecting on their learning and team work. Most teams (83%) identified the correct “unknown drug”, and only five teams (42%) submitted reports meeting all element, highlighting areas which are yet to be addressed and solidified in future courses. Common areas of improvement identified by faculty included: presenting incorrect generalizations; citing professor’s notes and lectures rather than readings; and, drawing inaccurate conclusions by overlooking critical information. Students reported achieving practice analyzing and synthesizing principles of medicinal chemistry, pharmacology and clinical pharmacy. **Implications:** An “unknown drug” project may help students link the relevant clinical effects of drugs to key principles in medical chemistry and pharmacology. Proper citation and critical thinking are components to which our students will continue to enjoy future exposure.

**AACP Survey of Professional Development Needs of Department Chairs.** Terry L. Schwinghammer, West Virginia University, Bernard A. Sorofman, The University of Iowa, John A. Bosso, South Carolina College of Pharmacy, Robert A. Kerr, American Association of Colleges of Pharmacy, Tobias E. Rodriguez, Academy for Academic Leadership, George Weinstein, Academy for Academic Leadership, N. Karl Haden, Academy for Academic Leadership. **Objectives:** Characterize the knowledge and skills required for department chairs, identify development needs, and then create AACP programs for chairs. **Method:** The 2010-11 Council of Faculties Faculty Affairs Committee (FAC), AACP staff, and the Academy for Academic Leadership
created and distributed a 30-question electronic survey in fall and winter 2010-11 to 357 AACP members self-identified as department chairs, heads, or directors in the AACP Roster. The survey requested data on: 1) reasons for becoming chair; 2) orientation received; 3) realities vs. pre-chair expectations; 4) time spent on activities; 5) importance of specific skills and abilities; 6) challenges; 7) job satisfaction; 8) performance evaluation; 9) leadership development programs; and 10) educational resources. Results: Responses were received from 166 chairs (46.5%) reporting 91 academic institutions in the U.S. (88) and internationally (3). Chairs expressed a desire to lead departments, but many did not receive formal orientation or anticipate the time required for communications, meetings, and personnel management. Challenges included working with administration and faculty, time management, and fully understanding the chair role. Most participated in development programs after becoming chair, and most receive annual evaluations. Contributors to job satisfaction were the academic environment and working with faculty and students. Implications: Survey results were used to create chair development programs for the 2011 and 2012 Interim and Annual Meetings. The FAC also compiled chair development resources for the AACP website. Survey results may inform faculty members who aspire to administrative roles and other academic leaders about the roles and responsibilities of department chairs.

Academically At-risk students’ Performance on the Learning and Study Strategy Inventory (LASSI). Renee M. DeHart, University of Arkansas for Medical Sciences, Tristan L. Myers, University of Arkansas for Medical Sciences, Bri N. Morris, University of Arkansas for Medical Sciences, Zoran Bursac, University of Arkansas for Medical Sciences, Jasna Vuk, University of Arkansas for Medical Sciences Office of Educational Development. Objectives: To evaluate performance of academically at-risk first year pharmacy students on the Learning and Study Strategy Inventory (LASSI) compared to their classmates. Method: Academically at risk (n=30) P1 and control (n = 31) students were asked to voluntarily complete the LASSI (a tool to identify student strengths that examines 10 subscales and 3 major components: skill, will, and self-regulation). LASSI scores are reported as percentile scores with higher scores indicating stronger skill. Data are presented descriptively in this report. Results: Seventeen (56.6%) at risk students completed the LASSI (vs. 11 [35.5%] of control students). At risk students scored lower overall in both the skill and will components compared to controls, but self-regulation scores were more widely varied. They scored higher than their classmates in the study aid (45th vs. 25th percentile) and time management subscales (65th vs. 40th percentile). A higher rate (more than one-third) of at risk students scored below the 25th percentile in the attention (35.3%) and self-testing (41.8%) subscales versus their peers. Several (17.6%) of at risk students scored below the 25th percentile in the motivation category (17.6%) while none of their classmates fell in the lowest quartile. Implications: Programming and/or interventions targeting attention and self-testing strategies may be especially helpful additions to a pharmacy school’s overall student retention plans. However, there was no one subscale that all at-risk students performed lower on compared to their peers, suggesting that academic coaching does need to be individualized to specific student needs.

Active Learning Implementation: Utilizing Faculty Meetings to Provide Education on Active Learning Methods in the Classroom. Kathleen A. Thompson, University of Wyoming, Michelle L. Hilaire, University of Wyoming, Cara A. Harshberger, University of Wyoming, Linda G. Martin, University of Wyoming, Whitney A. Buckley, University of Wyoming. Objectives: To evaluate the impact of faculty education on implementation of active learning strategies into the classroom. Method: Faculty members were asked to complete a survey to assess baseline knowledge of active learning terminology and experience with implementation of these techniques in courses. Through the academic year, five, 30-minute presentations were given during general monthly faculty meetings. Each presentation demonstrated a different active learning technique including, collaborative, problem-based and team-based learning. A post-education survey was administered at the end of the year to evaluate the impact of the educational demonstrations on the use of active learning in the classroom and faculty perceptions. We utilized an electronic survey instrument from SurveyMonkey.com. Each survey was emailed to faculty members and participation was recorded anonymously. Results: The baseline survey reported 82% of those surveyed were using active learning strategies in courses with case discussion being used most frequently (70.6%). The presentation at faculty meetings accounted for 57% of our faculty attempting a new active learning technique during the academic year. Think- pair- share activities and use of an audience response system, showed the most improvement from the post-education survey usage. Post survey results reported one respondent was not interested in incorporating active learning into lectures. Regarding the method of content delivery, the majority of faculty preferred receiving education via active participation during faculty meetings when compared to email or handouts. Implications: Faculty in all disciplines of pharmacy education are more likely to incorporate active learning strategies into coursework after participating in educational demonstrations.

Addressing Knowledge Deficits of Fourth Year Students. Jane R. Mort, South Dakota State University, Stacy Peters, South Dakota State University, Thaddeus Hellwig, South Dakota State University. Objectives: Variations in fourth year students’ schedules and preceptor grading can make identification of knowledge deficiencies challenging. A plan was designed to identify students with knowledge deficits via Pre-NAPLEX testing and subsequently guide students’ improvement. The project objectives were to describe the screening plan, outline the remediation process, and examine the relationship of Pre-NAPLEX to grade point average (GPA). Method: The plan required Pre-NAPLEX testing (passing score 75; 50 question exam). For students not “passing,” remediation was required. The remediation included Advanced Pharmacy Practice Experience (APPE) schedule review/revision, provision of a list of NAPLEX study resources, and review sessions by the student’s APPE faculty preceptor. Pre-NAPLEX (December 2011) scores were compared to GPA to determine comparative ability to identify students with knowledge deficits. Results: A total of 69 students took the Pre-NAPLEX (mean 91.0, SD 16.6) and 13 did not pass. Nine students had their schedules changed. Grade point averages correlated modestly with Pre-NAPLEX scores (r=0.43). Only four of the 13 students not passing the Pre-NAPLEX were among the 13 students having the lowest GPA. For the 13 students who failed the Pre-NAPLEX, average class standing based on GPA was 48th of 69 students compared to 63rd based on Pre-NAPLEX. Implications: The plan to identify students with knowledge deficits and provide remediation appears feasible. Screening with Pre-NAPLEX data identifies a different set of students than screening based on GPA. Therefore, it may be advantageous to use both measures.

Admission Predictors of Success in a Doctor of Pharmacy Program Using a Student Success-Difficulty Index. Eric G. Boyce, University of the Pacific. Objectives: The objectives of this study are to evaluate admission predictors of success in a Doctor of Pharmacy program based on a student success-difficulty index. Method: A student...
success-difficulty index of 4 levels (completed with excellence, completed without excellence or difficulty, completed with difficulty, did not complete) was created using student academic performance and progress, scholarships, graduating senior awards, and Rho Chi initiation. This index was then used to determine which admission factors were associated with success or difficulty in the Doctor of Pharmacy program for classes entering from 2003 to 2007. Results: The following factors were associated with more success using the success-difficulty index score: students transferring into the University (versus students in the University’s pre-pharmacy program), entering year, and pre-professional grade point average (all p<0.001). The following factors were not associated with the success-difficulty index score: gender, ethnicity, and age (all p>0.05). Implications: A student success-difficulty index provides a means of more comprehensively classifying students based on academic progress and other measures. This index provided very similar results to other analyses in evaluating predictors of success in a Doctor of Pharmacy program. PCAT scores were not evaluated because they are not required for entry into this Doctor of Pharmacy program. Pre-professional grade point average continues to be a major factor associated with success in this Doctor of Pharmacy program.

Advanced Pharmacy Practice Student Participation Within Antimicrobial Stewardship Activities. Timothy P. Gauthier, Nova Southeastern University, Jennifer G. Steinberg, Nova Southeastern University, Laura Smith, Jackson Memorial Hospital, Elizabeth F. Shepherd, Nova Southeastern University, Angela Clauson, Palm Beach Atlantic University. Objectives: The purpose of this study was to investigate which antimicrobial stewardship activities Advanced Pharmacy Practice Experience (APPE) students are engaged in under the supervision of pharmacist preceptors. Method: A 38-question exploratory electronic survey tool was developed utilizing the Infectious Diseases Society of America and the Society for Healthcare Epidemiology of America guidelines for developing an institutional program to enhance antimicrobial stewardship. After accounting for duplication, the survey was sent to preceptors of APPE students from two Florida colleges of pharmacy. Data was combined for final analysis. Results: 103 APPE preceptors surveyed responded. APPE students were found to be involved in all areas of antimicrobial stewardship. The most common areas of student participation in the management of antimicrobials were dose optimization, parenteral to oral conversion, streamlining or de-escalation of therapy, and education (for healthcare practitioners and patients). Participation in an anti-infective subcommittee and antimicrobial order form development were the least common. Implications: This is the first study to document APPE student participation in all major antimicrobial stewardship activities. As antimicrobial stewardship programs become established and continue to evolve, the appropriate role of pharmacy students within these programs remains to be defined. However, their participation will inevitably continue and contribute to the care of patients with infectious diseases. Future studies are necessary to determine the impact of pharmacy student involvement within antimicrobial stewardship programs.

Aligning Curricular Skills Development with IPPE Activities. Teresa H. Kane, Albany College of Pharmacy and Health Sciences, Jane K. Boyd, Albany College of Pharmacy and Health Sciences, Aimee F. Strang, Albany College of Pharmacy and Health Sciences. Objectives: Introductory pharmacy practice experiences (IPPEs) should apply, reinforce and advance components in the didactic curriculum. An evaluation was conducted to measure the appropriateness of content in the Pharmacy Skills Lab (PSL) course sequence as it related to student preparedness on IPPEs. The goals were to identify IPPE activities students observed or engaged in and determine student preparedness for these activities. Method: Surveys were developed for Community and Institutional IPPEs using IPPE activity checklists, PSL course content and faculty input. Students were asked to indicate activities they observed/participated in, and their level of preparedness for each activity. Surveys were administered during the first week of the fall semester immediately following summer IPPE rotations. Results: Five hundred forty-seven students completed the surveys (272 community, 275 institutional). At least 70% of students reported participating/observing 21/25 community IPPE activities. Blood pressure clinics, drive-through service, reviewing lab results and root cause analysis of medication errors were not routine activities. Ninety percent of students felt prepared for 18/21 activities they observed or engaged in. Unprepared areas included medication error reporting, use of error prevention strategies and drug-utilization review. At least 70% of students completing Institutional IPPEs reported participating/observing 27/28 activities. Computerized pharmacy order entry was not a routine activity. At least 90% of students felt prepared for 25/27 activities they observed/participated in. Students felt unprepared to track controlled substances or attend committee meetings. Implications: Data will be used for curricular improvement, paying particular attention on improving areas students did not feel prepared for.

Ambulatory Care APPE Student Assessment of Patient Medication Adherence, Hypertension Knowledge and Blood Pressure Control. Gina Garrison, Albany College of Pharmacy and Health Sciences, Teresa J. Lubowski, Albany College of Pharmacy and Health Sciences, John Polimeni, Albany College of Pharmacy and Health Sciences. Objectives: To provide a APPE pharmacy student-led service that assesses the relationship between blood pressure (BP) control, self-reported hypertension (HTN) therapy adherence, and patient HTN knowledge among adult patients in an ambulatory care setting. Method: Patients with HTN presenting for a primary care visit were invited by pharmacy students to complete a brief questionnaire regarding HTN adherence (Morisky Medication Adherence Scale [MMAS] score [4 indicating high level adherence]) and HTN knowledge (100% score indicating strong knowledge). Patient records were reviewed by students after the visit to assess BP goal and control. Patient adherence and HTN knowledge were evaluated relative to BP control using multiple logistic regression. Results: Eighteen students enrolled 132 patients (49% male) with a mean age of 57 ± 13 (23-89) years and a mean of 7 ± 4 medications, including 2 ± 1 HTN medications. 55% of study patients had controlled BP. The mean MMAS score was 3 ± 1. Higher MMAS scores increased the probability of BP control (p = 0.03). Mean HTN knowledge score was 62 ± 21(11-100%), and was not associated with BP control. A relationship was found between BP control and knowledge of personal BP goal (p = 0.02). Combined impact of MMAS score and HTN knowledge score was not significantly related to BP control. Implications: APPE students learned how to assess adherence, patient knowledge and BP control in a physician office setting. The combined impact of patient-reported HTN adherence and HTN knowledge were not significantly related to BP control.

An Evaluation of Academic Standards and Progression Policies of Colleges or Schools of Pharmacy. Theresa M. Kerr, Southern Illinois University Edwardsville, Therese I. Poirier, Southern Illinois University Edwardsville, Stephanie J. Phelps, The University of Tennessee. Objectives: To identify academic standards including grade point average requirements, criteria for academic dismissal/probation, and remediation policies in colleges and schools of pharmacy. Method: Two methodologies were utilized. The first method included an electronic survey emailed to 118 pharmacy colleges or schools designated
by ACPE with either candidate or full accreditation status. The second method included a review of student handbooks containing academic standards and progression policies available on the college or school’s website. **Results:** Data was obtained from 83% of schools and colleges of pharmacy using the two methods. All programs required a GPA greater than 2.0 for graduation; however, the majority (70%) required a 2.0. Thirty-six percent of colleges and schools of pharmacy would dismiss a student who made a D grade. The most common response to the number of F grades allowed prior to dismissal was one F. About 42% of programs reported that academic probation is based on a combination of both GPA and D and F grades. Most respondents noted that one APPE grade could be retaken prior to dismissal. Several remediation plans were identified. Seventy-seven percent of programs indicated that a course may only be retaken once. Most colleges and schools require that matriculation be completed within six years. **Implications:** As colleges or schools of pharmacy develop and/or reassess their academic standards and progression policies, the results of this study will prove useful. As we strive towards implementation of interprofessional education, pharmacy and other health professional programs may need to work towards uniform standards.

**An Evaluation of Lesbian, Gay, Bisexual, and Transgendered (LGBT) Health Education in Pharmacy School Curricula.** Madalene M. Mandap, *University of California at San Francisco*, Sarah T. Carrillo, *University of California at San Francisco*, Sharon L. Youmans, *University of California at San Francisco*. **Objectives:** The LGBT community has increased health risks including higher rates of certain cancers, depression, tobacco use, and substance abuse. These individuals are less likely to seek medical treatment and have higher rates of dissatisfaction with the healthcare system. It is unclear to what extent pharmacy curricula prepare students to provide quality care to this population. The objective of this study is to describe to what extent LGBT health content is integrated in pharmacy curricula. **Method:** Between November 2011 and January 2012, Curriculum Deans (or equivalent) were invited to complete a 14-item questionnaire to assess the amount of LGBT health content taught in their respective curricula. **Results:** A total of 28 schools (N=125, 22%) responded. Of the 28 respondents, 43% reported having LGBT content in required curriculum with 39% reporting 1-3 hours and 4% reporting 4-10 hours. The top topics taught by schools were HIV in LGBT people (71%) and sexually transmitted diseases (not HIV) (46%). Faculty development for teaching LGBT health content was provided by 18% of schools. The coverage of LGBT content was rated as "good or very good" by 14% and "very poor" by 32% of respondents. **Implications:** Our findings will be used to suggest strategies and recommendations that may help prepare faculty to teach LGBT health content and assist curriculum committees to integrate this material into pharmacy curricula.

**An Exercise to Demonstrate Medical Website Selections of First Year Pharmacy Students.** Teresa V. Lewis, *The University of Oklahoma*, TramAnh Nguyen, *The University of Oklahoma*, Tracy M. Hagemann, *The University of Oklahoma*, Alice E. Kirkpatrick, *The University of Oklahoma*. **Objectives:** 1. Identify the types of online resources which students refer when answering drug information questions. 2. Evaluate credibility of online resources which students use to answer a given drug information question. **Method:** Students were assigned two drug information questions to answer using internet resources. Responses and search strategies were summarized and evaluated. The instructor reviewed the advantages and disadvantages of various sites with the students. **Results:** Most students were able to answer their drug information questions by searching the web with their present skill. Websites most often used by students included: Wikipedia, Drugs.com, Medscape, and Mayo Clinic. When primary literature or practice guidelines were referenced, they were often outdated. In general, students cited credible webpages. However, critical analyses of these sources showed that some were authored by patient groups rather than medical professionals. **Implications:** Novice pharmacy students question the value of learning about good internet search skills. However, webpages that students refer for drug information may be outdated or lack sufficient details. Pharmacy students are good at searching the Internet, but they are not using the best resources. By understanding the types of resources which students refer for medical information, drug information course instructors are better able to teach and empower students to independently use the best internet resources available. Students’ improved search skills will ultimately provide more accurate and reliable internet drug information retrieval thus positively impacting their quality of patient care in future professional careers.

**An Objective Structured Teaching Examination (OSTE) for Faculty Development.** Deborah A. Sturpe, *University of Maryland*, Cherokee Layson-Wolf, *University of Maryland*, Mary Lynn McPherson, *University of Maryland*, Stuart T. Haines, *University of Maryland*. **Objectives:** Pilot and evaluate an objective structured teaching examination (OSTE) for faculty development. **Method:** Two OSTE cases were developed. Student actors were trained to portray each OSTE case in a standardized manner. Case A simulated a student-preceptor interaction in an ambulatory clinic where the student’s case presentation was disorganized and foundational knowledge was poor. Case B simulated a student-faculty interaction regarding an exam challenge where the student’s emotions escalated if the challenge was denied. Each faculty participant completed both cases. The interaction was video recorded as well as remotely observed by one of the session leaders. Each encounter was evaluated by a session leader and self-evaluated by faculty participants using a behavior checklist. Faculty, standardized students, and session leaders participated in a one-hour debriefing session immediately following the OSTE. Pre-post feedback was collected. **Results:** Fourteen faculty/PGY-2 residents participated. Each case checklist contained seven equally weighted items. The mean score on Case A was 6.1 and Case B was 5.5. Exemplary teaching behaviors most frequently absent were: 1. redirecting student to present data in an organized manner (Case A); 2. responding empathetically (Case B); and 3. offering follow-up (Case B). All participants agreed that student acting was realistic, the debriefing session was useful, OSTE was an effective approach, and they would participate in future OSTE scenarios. All but one participant felt the OSTE scenarios were realistic. One participant noted “all faculty in all departments should complete this activity.” **Implications:** OSTE is a realistic and well-received approach for faculty development that merits further investigation.

**An International Pharmacy Practice and Public Health Advanced Pharmacy Practice Experience (APPE) in Port-au-Prince, Haiti.** Suzanna Gim, *Long Island University*, Agnes Cha, *Long Island University*. **Objectives:** To document and assess student learning during an international medical mission-based Advanced Pharmacy Practice Experience (APPE) in a resource poor setting. **Method:** Six fourth-year pharmacy students enrolled in the international elective course. The students and two pharmacy faculty spent twelve days in Port-au-Prince, Haiti providing pharmacy services as part of an interdisciplinary medical mission team. Various assessments were used to measure learning including a reflection paper, preparation and delivery of an educational presentation for local clinic staff, a practical exam in the field, and pre-post trip surveys. Each student was required to maintain
An Interprofessional Service Learning Initiative-fall Prevention for Older Adults: Report of a Pilot Project. Susan W. Miller, Mercer University, Lisa M. Lundquist, Mercer University, Christine M. Klein, Mercer University, Leslie F. Taylor, Mercer University, David W. Taylor, Mercer University. Objectives: To describe a pilot interprofessional service learning initiative engaging student pharmacists and student physical therapists in providing fall risk assessments and fall prevention educational sessions to older adults. Method: Student pharmacists and physical therapists participated in pre-initiative assessments of older adults to determine fall risk via medication review and physical function testing, followed by 10-weeks of student-led educational programming in fall prevention strategies, and concluded with post-initiative assessments for fall risk. Pre- and post-initiative validated surveys were administered to measure readiness for interprofessional learning (5-point Likert scale with 5 = strongly agree and 1 = strongly disagree). The study was IRB approved and voluntary signed informed consent was obtained. Pre- and post-initiative surveys were compared using descriptive statistics and paired t-tests. Student comments were gathered pre- and post-initiative. Results: A total of 16 (100%) student pharmacists and physical therapists participated in the initiative and completed the pre- and post-initiative surveys. Students’ agreement with the need to trust and respect others for small group learning to work increased (p < 0.05) and agreement that shared learning will assist in understanding personal limitations increased (p < 0.05). Students’ comments revealed anticipation of learning roles of other healthcare professionals (n = 14, 87.5%), benefit from learning with other healthcare professionals (n = 10, 62.5%), and suggestion of smaller interprofessional groups (n = 2, 12.5%). Implications: Students’ impressions of interprofessional learning improved following the fall prevention in older adults project. Based on pilot data, expanded opportunities for interprofessional service learning are being explored.

Applying Limited Sampling Theory to Course Competency Evaluations. Catherine L. Hatfield, University of Houston, Kevin Garey, University of Houston, Jessica M. Cottreau, University of Houston. Objectives: The objective of this study was to determine what percentage of students need to complete course competency evaluations in order to represent the class as a whole. Method: Five class evaluations from the fall of 2011 representing the first three years of the pharmacy curriculum and courses taught by each of the 2 academic departments assessed using CourseEval. Bootstrap analyses were performed (500 iterations, each) by increasing the proportion of sampled evaluations in relation to the entire class evaluations. Mean sample scores for evaluations were compared between bootstrap-derived averages and the overall class average. Increasing proportion of samples was done until the bootstrap-derived average was within ±0.1 or ±0.25 of the overall class average for at least 95% of the iterations. Results: Fourteen course competencies from the five courses (296 total responses) were assessed. Overall class averages ranged from 3.12 ± 1.09 to 4.33 ± 0.83 on a five-point likert scale. Using the competency with the highest degree of variation, a sampling strategy consisting of a random sample of 40% of the total responses was within 0.25 of the overall class average and a strategy of 50% of the total responses was within 0.1 of the overall class average at least 95% of the time. Proportion required was less for course evaluations with less variance. Implications: Many students choose not to participate or rush through course competency evaluations. By requiring only a percentage of students to complete these evaluations, the data generated from these evaluations will likely be more beneficial to the College.

Are Pharmacy Students Embracing Tablet Technology? Prevalence of Use and Student Perceptions. Margarita V. DiVall, Northeastern University, Christina Guerra, Northeastern University. Objectives: Evaluate the prevalence of tablet computer ownership, use scenarios, and perceptions of value of tablet technology among P3 and P4 students. Method: Surveys were administered to 137 P3 and 123 P4 students to identify prevalence of tablet ownership, common uses, and perceived benefits. Results: Among P3 students (80% responded to survey), 12.8% own a tablet computer (71% iPads) and another 18.5% plan to purchase one before graduation. P3 students use tablets most frequently for connectivity (86%), drug information (71%), and class readings (50%). 50% and 57% felt that tablet increased their studying time and learning, respectively. Top barriers for purchase were cost (83%) and uncertainty that benefits are worth the cost (80%). All P4 students responded to survey with 8.9% self-identifying as tablet owners (91% own iPads). 72.7% reported daily use of tablets during rounds to access of drug information resources and decision support tools. 81.8% reported using their tablet for patient education and 72.7% for discharge counseling. All but 1 student (90.9%) agreed or strongly agreed that tablet use enabled them to provide better patient care, stay organized, and learn more during APPEs. While many rotation sites are wireless Internet enabled, only one site allowed students to access electronic medical records on their tablets. Implications: Despite the wide variety of use in didactic and experiential settings and perceived benefits, the prevalence of tablet ownership among our students was relatively low. Survey data can inform other students in their decision to purchase a tablet.

Assessing Content of Law Curriculum in Colleges of Pharmacy in the United States. Stacy E. Miller, East Tennessee State University, Nicholas Hagemeyer, East Tennessee State University, L. Brian Cross, East Tennessee State University. Objectives: Bill Gatton College of Pharmacy at East Tennessee State University is interested in using innovative teaching methods to incorporate pharmacy law concepts throughout the curriculum in a longitudinal nature. This project seeks to characterize law curricula at US institutions of pharmacy based on the following criteria: teaching methods, curricular placement and integration, and instructor credentials. Method: A survey about law curricula was sent electronically to individuals at 127 colleges of pharmacy. The survey inquired about curricular placement, amount of time dedicated to formal lecture and in-class exercises, utilization of innovative teaching techniques and instructor credentials. Results: Individuals from 95 institutions responded to the survey (74.8% response rate). Law courses are typically offered in the third year of the four year professional program (46.2%). 45.6% of course coordinators have PharmD degrees, 55.3% have BS Pharmacy degrees and 37.8% have...
Assessing Diabetes Training Program on Pharmacy Students' Competence, Confidence, and Attitudes in Providing Diabetes Care. Supakit Wongwathananukit, University of Hawaii at Hilo, Candace Tan, University of Hawaii at Hilo, Yaw Owusu, University of Hawaii at Hilo, Paula Zeszotarski, University of Hawaii at Hilo, Lara Gomez, University of Hawaii at Hilo, R. Scott Holuby, University of Hawaii at Hilo. Objectives: To (1) develop and implement the Diabetes Training Program for pharmacy students; (2) compare students' competence, attitudes, and self-confidence before and after completing the program; (3) determine if there is a difference in attitude towards diabetes, and students' self-confidence based on the standing year in the curriculum between the second and third year students. Method: The program provided students with didactic lectures from integrated therapeutics course and hands-on learning sessions which included five areas of diabetes care: blood glucose check, administering insulin, foot care, insulin pens education, and A1c screening. Students were randomly divided into five groups and rotated through each area. Pretest and posttest instruments (i.e., competence worksheet, Diabetes Attitude Scale, Self-Confidence in Diabetes Care) measured students' outcomes in diabetes care. Results: Students' competence and the overall mean self-confidence score significantly improved after the program for both classes (p<0.001). The overall mean attitude score did not significantly change for either class. There was an interaction effect of pre- and post-training program on self-confidence scores, which were statistically different for the second and third year students (p = 0.001). Third year students had significantly higher scores than those in the second year for both pretest and posttest of self-confidence scores. However, no significant interaction was found for attitude scores. Overall, students were satisfied with the program. Implications: The program with hands-on learning has improved the competency and self-confidence of students. It is an effective approach of training pharmacy students in diabetes care and should be embraced in the Colleges of Pharmacy.

Assessing Student Perceptions of Active Learning in a Pharmacotherapy Course. Brian D. Buck, The University of Georgia, Michael Fulford, The University of Georgia. Objectives: The objective of this study was to assess student perceptions of a redesigned, required four credit hour third year Pharmacotherapy course from a didactic, teacher-centered to an active learning, student-centered classroom format. Method: Students (n=135) were requested to complete a brief questionnaire, which included Likert scale-type and open-ended questions, designed to gauge students' perception of active versus didactic learning. Results: A majority of students (69.7%) completed the survey. Prior to Pharmacotherapy, students (93%) indicated no to minimal exposure to courses (mean = 1.2) delivered using an active learning format. A majority (53.1%) preferred active learning (rated as “more beneficial” or “extremely more beneficial”); 28.6% preferred didactic-based instruction. 53.8% perceived an above average to significant improvement in ability to apply knowledge, and 65% reported an increased level of enthusiasm for becoming a patient care provider from beginning to end of semester. Students preferring active learning format were more likely to perceive the benefit of improved knowledge application (r=0.561, p=0.01) versus those indicating didactic preference. Implications: Even though students had limited exposure to active learning and student-centered teaching, the majority prefer and perceive benefit from this format compared with didactic learning methods. Increasing student “buy-in” to active learning for those that prefer didactic based instruction may be important to maximize enthusiasm for applying knowledge in the patient care setting.

Assessing Students’ Perceptions of Pharmaceutical Sciences in an Integrated Infectious Diseases Pharmacotherapy Course. Lunawati L. Bennett, Union University, Elias Chahine, Palm Beach Atlantic University, Matthew DellaVecchia, Palm Beach Atlantic University, Haena Yoon, Palm Beach Atlantic University. Objectives: To develop and implement a variety of active-learning exercises that requires students to integrate and apply knowledge of pathophysiology, pharmacology, medicinal chemistry, and therapeutics in an infectious diseases pharmacotherapy course, and to evaluate the effectiveness of this approach in improving students’ confidence levels and perceptions of the relevance of pharmaceutical sciences to pharmacy practice. Method: A five-credit integrated infectious diseases pharmacotherapy course is required for third-year pharmacy students. Along with traditional lectures, both science and clinical faculty utilized a case-based approach to teach pathophysiology, pharmacology, medicinal chemistry, and therapeutics. Using a Likert scale instrument, students were surveyed at the beginning and at the end of the course to assess their confidence levels and perceptions of the relevance of pharmaceutical sciences to pharmacy practice. Survey data were analyzed using the Wilcoxon Signed-Rank test. Results: Of the seventy-four students enrolled in the course, forty completed the surveys. Statistical analysis indicated a significant improvement in the median pre- and post-assessment values of students’ confidence levels regarding the understanding of pharmacology and medicinal chemistry of antimicrobials. A non-statistically significant trend towards improvement in the median pre- and post-assessment values of students’ perceptions regarding the relevance of pharmacology and medicinal chemistry of antimicrobials to pharmacy practice was also observed. Implications: Incorporating cases into traditional lectures in an integrated infectious diseases pharmacotherapy course improved students’ confidence levels regarding the understanding of pharmacology and medicinal chemistry of antimicrobials and may improve their perceptions of the relevance of pharmaceutical sciences to pharmacy practice.

Assessing Pharmacy Student Empathy Using the Jefferson Scale of Empathy in a Diabetes Elective Course. Jessica L. Kerr, Southern Illinois University Edwardsville, Erin M. Timpe, Southern Illinois University Edwardsville. Objectives: The Jefferson Scale of Empathy (JSE) is a validated tool to assess empathy in health professionals. Family Medicine Physicians who have been evaluated with the use of the JSE found that physicians with higher empathy scores (scores of 129-137 (high) versus scores of 103-117 (low)) on the JSE had greater achievement of patient outcomes for the treatment of diabetes. Evaluations of students’ empathy in patient care are lacking in pharmacy. The purpose of this study was to assess pharmacy student empathy with the use of the JSE in a diabetes elective. Method: Students enrolled in the 2010 fall semester of the Diabetes Care and Experiences elective received informed consent and were eligible to participate in pre and post surveys of the JSE administered during the first and last class periods. This course teaches advanced therapeutics and
incorporates the use of simulations to emphasize empathy in diabetes patient care. The JSE asks 20 Likert-style questions with response options of 1 through 7. This project was approved by the SIUE IRB. 

**Results:** Thirty students submitted complete pre and post surveys. The average JSE scores increased from a mean of 109 at the beginning of the course to a mean of 118 at the end of the course. 

**Implications:** Students’ JSE scores increased from low to moderate throughout a diabetes elective. This tool may not reflect impact only of the elective, but does give an overall idea of pharmacy student empathy. Further examinations of empathy should be completed following experiential rotations.

**Assessing Pharmacy Students’ Ability to Evaluate High Blood Pressure Measurements Through Evaluation by a Training Arm.** Michelle M. Bottenberg, Drake University, Ginelle A. Schmidt, Drake University, Sally L. Haack, Drake University, Chasity Mease, Walgreens Patient Care Center / Drake University, Andrew M. North, Drake University. 

**Objectives:** To compare student accuracy of normal and high blood pressure measurements using a simulator arm. Simulator arms were programmed with pre-specified normal and high readings. Third-year PharmD Candidates enrolled in a required pharmacy skills and applications course participated in the study. 

**Results:** One hundred and sixteen students completed both blood pressure measurements. There was a significant difference between the accuracy of high systolic blood pressure (HSBP) compared to normal systolic blood pressure (NSBP) [mean HSBP difference 8.4 ± 10.9 mmHg, mean NSBP difference 3.6 ± 6.4 mmHg; p value < 0.001]. However, there was not a significant difference between the accuracy of high diastolic blood pressure (HDBP) compared to normal diastolic blood pressure (NDBP) [mean HDBP difference 6.8 ± 9.6 mmHg, mean NDBP difference 4.6 ± 4.5 mmHg; p value = 0.089]. The number of high attempts and normal attempts were significantly correlated. 

**Implications:** Accuracy of student measurement of high systolic blood pressure was different than measurement of normal systolic blood pressure using the simulator arm. The data is suggestive that high blood pressure readings may cause more student inaccuracies. Additional instruction and experience with evaluating high blood pressure measurements may be needed. Future studies could focus on abnormal blood pressures (both high and low) to confirm these findings.

**Assessing the Impact of Water Improvement, Sanitation, and Hygiene Education Initiatives on Health in Uganda.** KarenBeth H. Bohan, Wilkes University, Marie Roke-Thomas, Wilkes University, Richard A. Odoi, Makerere University College of Health Sciences, Joseph Shipula, Wilkes University. 

**Objectives:** Sustainable access to safe water is part of the World Health Organization’s Millennium Development Goal 7. Although many organizations step forward to help, water projects often fail due to broken equipment, lack of hygiene education and poor sanitation facilities. Busoga Trust America (BTA), a non-governmental organization working in rural Uganda, has implemented water improvement projects to provide benefits to health by seeking to avoid the usual pitfalls mentioned above. This research project was designed to assess the impact of BTA’s initiatives on the health of villagers. 

**Method:** The Ugandan government granted research clearance for the administration of oral surveys to gather health information to focus groups in Iridanda, a village with access to clean water for 2 years and Mboira, a village using an open water source. Local healthcare providers were interviewed about disease prevalence and clean water access and asked to rank nine health issues in order of priority. 

**Results:** Focus group interviews in Mboira revealed frequent diarrheal illnesses, which they attributed to consuming water from the open source with a fecal coliform count >100 CFU/100ml. Iridanda villagers reported only rare cases of diarrhea since access to the BTA water source with 0 CFU/100ml. 64% of healthcare workers interviewed ranked access to clean water in the top 2 priorities for improvement. 

**Implications:** Villagers and healthcare providers in Masindi perceive clean water as necessary for improving health. Future research efforts will focus on gathering objective data longitudinally from health records to better correlate access to safe water and disease prevalence.

**Assessing the Prevalence and Characteristics of Dual Pharm.D./M.P.H. Programs Offered at ACPE-accredited Schools of Pharmacy.** Justine S. Gortney, Wayne State University, Sheila Seed, Massachusetts College of Pharmacy and Health Sciences-Worcester, Lisa J. Woodard, Washington State University, Ann M. Wiesner, Virginia Commonwealth University, James Nash, Regis University, Nancy Borja-Hart, East Coast Institute for Research /St. Vincent’s PATH Program, Jean T. Carter, The University of Montana, Kumar Mukherjee, Chicago State University, David M. Scott, North Dakota State University. 

**Objectives:** According to ACPE standards, graduating pharmacy students should possess knowledge of public health issues and development of health policy. Colleges of pharmacy have developed dual degree programs to accommodate students interested in public health. The charge of this committee was to assess prevalence and characteristics of dual (Pharm.D./M.P.H. or Pharm.D./Dr.P.H.) degree programs offered to pharmacy students enrolled at ACPE-accredited schools/colleges of Pharmacy. 

**Method:** A survey containing 18 questions regarding the existence of the specified dual degree program, practice affiliations, and curriculum was developed. The survey was distributed electronically to the AACP Public Health List Serve. Completion of the survey was voluntary and approved by the Wayne State IRB. 

**Results:** Ninety six responses were received from 77 colleges. Twenty-two percent indicated a dual degree program through the school of pharmacy. 19.5% offered a MPH degree within another college at the institution, and 6.4% indicated an affiliation with an outside institution. The majority of programs required greater than 20 additional credits for the joint degree, a capstone project, and classroom and online didactic courses. About 50% indicated that an Advanced Pharmacy Practice Experience rotation fulfilled a requirement for a MPH. Program existence ranged from 5 to 10 years. Thirty percent of respondents stated they were in a developmental phase of a combined degree or evaluating future plans. 

**Implications:** There is a trend that schools of pharmacy recognize this complementary educational pathway, and the increasing prevalence of these programs indicate the growing need to involve pharmacists in public health.

**Assessment of Health Literacy Training in P1 Pharmacy Students.** Jonathan P. Brady, Wilkes University, Edward F. Foote, Wilkes University, Scott Bolesta, Wilkes University. 

**Objectives:** To measure the effects of a learning experience on knowledge and confidence of health literacy (HL) in P1 students. 

**Method:** All 72 P1 students completed a pre-class assignment which involved assessing HL in a patient/volunteer using three different tools. During a two hour class, students participated in lecture and active learning exercises which addressed several components of HL including patient assessment, risk factor identification, recognition of signs of low HL, and counseling techniques. Prior to, and immediately after class, students completed an assessment which consisted of identical knowledge (20 questions) and confidence surveys (5 questions). The confidence survey was rated on a scale of 1 (not at all confident) to 5 (extremely confident). The post-class survey also included a retrospective pre-test confidence component to assess response shift bias. Survey questions were adapted from
a previous study (AJPE 2010;74(8):article137). Results: Pre- and post-survey data was available for 79% of the class. The mean knowledge score increased from 79% pre-class to 84% post-class (p<0.001). The mean pre-test, post-test and retrospective pre-test confidence was 3.8, 4.3 and 3.2, respectively (p<0.05 for all between group differences). The lower retrospective pre-test confidence suggests the presence of response shift bias. The “Newest Vital Sign” was chosen by 77% of students as the HL assessment tool they would prefer to use. Implications: Integration of active learning exercises and pre-class exposure to assessment tools within the HL component of a required pharmacy course increased knowledge of HL issues and improved confidence in our students’ ability to perform HL-related activities. 

Assessment of Pharmacy Students’ Confidence and Knowledge in a Patient Assessment Course. Jennifer A. Campbell, Appalachian College of Pharmacy, Leah K. Hollon, Appalachian College of Pharmacy, Sarah T. Melton, C-Health, PC. Objectives: To assess the change in knowledge and confidence of patient assessment skills for second year Doctor of Pharmacy students at the Appalachian College of Pharmacy. Method: Patient assessment skills are vital to patient care, confidence as a new practitioner and are required by ACPE standards and guidelines. Informal assessments have been conducted in this course since 2007; however, formal assessment has not been conducted. In response to this need, two pre- and post 10-item survey instruments using a 5-point Likert scale were designed and administered to 77 students. The surveys were administered on the first and last day of the course and assessed personal confidence in areas such as blood pressure, SOAP note writing and ankle brachial index (ABI). Both surveys were based on specific core objectives and competencies that were then assessed on the final, an objective structured clinical examination (OSCE). Results: There was a statistically significant increase in knowledge and confidence between the pre and post survey on all ten items measured (p<0.05). For example, students’ ability to perform a tailored HEENT (head, eyes, ears, nose, throat) exam increased from pre (mean = 2.00 ± 0.816) to post survey (mean = 3.38 ± 0.757) (t = -11.860, p<0.001). Likewise, students’ assessment of the MMSE (mini-mental state exam) also increased from pre (mean = 2.42 ± 0.942) to post (mean = 4.68 ± 0.497) (t = -18.315, p<0.001). Additionally, internal validity of the MMSE measurement was congruent with externally observed OSCE scores (mean = 98.00 ± 6.20). Implications: A patient assessment course increased student perceptions and confidence of skills. This perception was supported by an external objective evaluation. 

Assessment of Students’ Knowledge and Confidence of Medicare Part D and Immunizations. Rajul A. Patel, University of the Pacific, Suzanne M. Galal, University of the Pacific, Sian Carr-Lopez, University of the Pacific, Seth Gomez, University of the Pacific, Van Duong, University of the Pacific, Caitlin Mizoshi, University of the Pacific, Lauren Ujihara, University of the Pacific, Tina Tran, University of the Pacific, Joseph A. Woefel, University of the Pacific, Mark Walberg, University of the Pacific. Objectives: We examined how pharmacy students’ knowledge and attitudes about Medicare Part D and immunizations changed as a result of an elective course comprised of didactic and experiential education components. Method: Forty pharmacy students enrolled in a two-semester Medicare Part D course. The first semester provided lecture material about the Part D benefit and common adult vaccinations. The second semester was experiential; students organized, facilitated and participated in 13 community outreach events targeting Medicare beneficiaries. The goal of each event was to optimize beneficiaries’ Part D plan and provide vaccinations when appropriate. Students completed an assessment tool on the first and last day of class. The tool gauged students’ knowledge, confidence and attitudes of Medicare Part D and immunizations. The number of beneficiaries provided Part D plan assistance and immunizations by each student was recorded at each event. Results: On average, each student assisted 16 beneficiaries with their Part D plan. Additionally, 223 immunizations were administered by students during outreach events. The mean percent of correct answers related to Part D knowledge increased from 12% to 81% (p<0.001) and immunizations knowledge rose from 33% to 74% (p<0.001) between the first and last day of class, respectively. The percentage of students expressing confidence in providing Part D plan assistance increased from 3% to 100% (p<0.001) and confidence providing immunizations rose from 85% to 100% (p<0.001) between the first and last day of class, respectively. Implications: Students’ knowledge and confidence of Part D and immunizations significantly improved after didactic learning and real-world experience assisting Medicare beneficiaries. 

Assessment of Outcomes from Use of a Standardized Behavioral Interview Within the Candidate Recruitment Process. Robert B. Stanton, Marshall University, Glenn Anderson, Marshall University, Kimberly A. Broedel-Zaugg, Marshall University. Objectives: To assess scale internal consistency and reliability of faculty scoring occurring during performance of a standardized candidate interview. Method: A standardized behavioral interview (SBI) was included as part of the School’s evaluation process. The SBI assessed 9 domains: Initiative, Teamwork, Integrity, Problem Solving, Decision Making, Time Management, Leadership, Communication, and Personal Presentation. Trained interview teams, consisting of one adjunct and one school faculty member, conducted all SBI. Descriptive prompts were provided defining the domain being assessed. Interviewers scored the candidate individually. Final scores were determined based upon agreement as follows: 1) same score, that score was recorded; 2) two domain scores within 1, the average score was recorded; and 3) two domain scores differed by more than 1, a deliberative score was recorded. Results: The SBI was administered to 29 prospective candidates. Internal consistency reliability was 0.915, 0.916, and 0.934 for the adjunct faculty, full-time faculty, and group scoring. Deletion of individual domain prompts had similar, though negligible, effect upon overall internal consistency. Deletion effect was greatest for communication domain (r = 0.898). Individual team member scoring correlated well (α = 0.920). Domain specific score divergence was greatest for teamwork (mean = 0.411±1.25, p = 0.229) and integrity (mean = 0.321±1.13, p = 0.323). Implications: Similarity of team member SBI scoring indicates that opportunities for further efficiencies in interview process may exist. Use of single trained interviewers should be considered. 

Assessment of Student Development: Analyzing Literature Evaluation Skills in a Dual-campus Accelerated Curriculum Program. Aaron B. Atkins, South University, Keri C. Anderson, South University, Sarah F. Braga, South University. Objectives: To analyze the academic development of students through their ability to critically evaluate medical literature in a dual-campus accelerated curriculum program. Method: At South University students in their first professional year are introduced to primary literature while advanced evaluation is emphasized in the second professional year. For this analysis students were required to review a primary literature article in their first professional year and determine if the medication should be recommended in practice. Subsequently, students were required to review the same article in their second professional year and reexamine if the medication should be recommended in practice without review of their previously provided responses. Students’ conclusions from the first
professional year were compared to the second year responses.  

**Results:** Combined campus data demonstrated a notable shift in students’ recommendation from the first to second professional year. The first year responses consisted of 69% in agreement that the agent should be recommended in practice while 31% disagreed. The second year responses demonstrated 31% in agreement that the agent should be recommended while 69% disagreed. Overall, a total of 53% changed their opinion from the first year to the second year.  

**Implications:** The change in students’ ability to critically evaluate medical literature provides evidence of academic growth from the first to the second professional year in a dual campus accelerated curriculum program. This interim analysis warrants further assessment of student development spanning the curriculum to include the final professional year.  

**Attitudes of First-Year Pharmacy Students Toward Mandatory Drug Testing at a School of Pharmacy.** Marshall E. Cates, Samford University, Maggee Oliver, Samford University; Michael D. Hogue, Samford University, Susan P. Alverson, Samford University, Thomas W. Woolley, Samford University Brock School of Business.  

**Objectives:** To determine the attitudes of incoming pharmacy students at the McWhorter School of Pharmacy (MSOP) toward our mandatory, random urine drug screening program.  

**Method:** The study was an anonymous, voluntary survey that was composed of 40 questions using a Likert-type scale. The survey was administered during orientation week prior to the session in which the policies and procedures of MSOP’s drug screening program were to be discussed.  

**Results:** The survey was completed by 129 of 129 students (100%). Approximately two-thirds of participants were aware of MSOP’s drug screening program prior to applying, but only 3.1% felt uneasy about applying to the school because of the program. The greatest concerns expressed by participants included what would happen if a drug screen is missed (55.5%), being busy with other matters when called for screening (48.8%), amount of time that it will take when called for screening (48.4%), and false-positive drug screens (45.7%). Approximately three-fourths of participants agreed that all students in all pharmacy schools should undergo random drug screening and that random drug screening has the potential to decrease illegal substance use among pharmacy students. Over 90% of participants agreed that it is important to detect a substance use problem in pharmacy students, and almost 60% agreed that they were glad that MSOP has a random drug screening program.  

**Implications:** Although there were definite concerns expressed regarding pragmatic issues surrounding drug screening, the first-year students held generally favorable opinions about our mandatory, random urine drug screening program.  

**CCLAP: A Unique System for Peer-to-Peer Feedback.** Craig A. Kovera, Touro College of Pharmacy-New York, Nataliya Shinkazh, Touro College of Pharmacy-New York.  

**Objectives:** Pharmacy students frequently work in teams, and must learn skills of communicating and collaborating while contributing to a product. Peer-to-peer evaluation (PEP) can powerfully assist professional development through constructive 360 degree feedback, yet we know of no instrument that is broad-based and simple for completion, data entry and reporting in pharmacy curricula. The objective is to document initial development of a new PEP system having these unique features.  

**Method:** A thorough literature search and AACP Listserve inquiry was used to identify PEPs in use by Schools of Pharmacy. PEPs were independently reviewed for theoretical relevance to an array of team-based situations. Following analysis of literature, materials obtained, and need, a consensus was reached on themes and particular concepts to be covered. Without further reference to previous PEPs, CCLAP was created, along with a detailed rubric, and mechanism for data entry and generating reports.  

**Results:** Development yielded a PEP system comprised of a single-page instrument with 16 questions across six themes (Contribution, Communication, Leadership, Attendance, Professionalism), rubric for systematic score assignment, quick 9-key electronic data entry, individual/group report generation for feedback, and analysis capability. The process culminating in CCLAP as a model for testing and refinement is described.  

**Implications:** CAPE and ACPE have emphasized the importance of team-based instruction in education, given that pharmacists’ play key roles as members in healthcare teams. CCLAP is a unique PEP system designed for diverse team applications to formatively assist students in developing key pharmacist skills. Second-stage development involving test-retest reliability is described elsewhere.  

**Changes in Perception of Rural High School Students Regarding Pharmacy Careers after Active-Learning Day Camps.** Nancy H. Hope, Presbyterian College, Julie M. Sease, Presbyterian College, Margaret A. Franklin, Presbyterian College, Laura M. Fox, Presbyterian College.  

**Objectives:** Enhance understanding and evaluate changes in perceptions in high school students from rural, underserved communities with regards to pharmacy career opportunities.  

**Method:** Two separate groups from rural communities participated in a pharmacy day camp. A pre-survey assessed baseline understanding of pharmacist activities, perceptions of professional traits, pharmacy career opportunities, and overall interest in learning about pharmacy careers. Understanding was measured on a 10-point scale (1 = not at all, 10 = fully comprehends), and perceptions were based upon free text responses. Students were presented with a simulated patient case that was followed through active-learning activities (a general overview of pharmacy careers, community pharmacy experience, hospital
Combining “Top 150” Drug Knowledge with Adherence by Assigning a Simulated 10-week Single-drug Regimen. Cara M. Brock, Roosevelt University, David G. Fuentes, Roosevelt University, Meghana V. Aruru, Roosevelt University, Karen MacKinnon, HealthKey Solutions. **Objectives:** To assign one drug from our “Top 150” drug list to each student (n = 66) to illustrate barriers patients face with simple regimens. **Method:** Students were assigned one drug from the “Top 150” drugs and assigned to a 10-week regimen. Black licorice candy was used as the drug. Students were instructed to contact course coordinators for refills and track their adherence. A reflective paper was assigned and graded against a 14-item rubric. Therein, students were to report on their adherence patterns and demonstrate knowledge of their assigned drug and associated disease state. **Results:** Two students (3%) requested refill #1 on time. All remaining students either requested refill #1 late, or not at all. Approximately half requested refill #2, and only one student requested refill #3. All students reported some level of non-adherence, regardless of using once, twice, or thrice a-day regimens. All students identified their drug’s indication. A majority (98%) successfully described their drug’s mechanism of action, impact of food on drug efficacy, and pertinent metabolism (renal/hepatic) considerations. Most students discussed whether an alternative drug could have treated their disease and improved adherence (98%), and whether additional auxiliary labels were necessary (95%). Students reported understanding barriers to adherence and being able to empathize with their patients. Students frequently reflected on strategies they found useful in improving their own adherence. **Implications:** Simulating simple drug regimens over 10 weeks from the “Top 150” drugs can help students learn about commonly used medications, and help them understand the barriers that make medication adherence difficult.

Comparing Student Exam Performance in a Traditional Lecture Model Versus a “10-minute” Lecture Model. David G. Fuentes, Roosevelt University. **Objectives:** To compare aggregate student exam performance and satisfaction after completion of psycho-pharmacotherapy courses taught in either a traditional, passive lecture model compared to an alternative 10-minute model. **Method:** Psycho-pharmacotherapy course topics were taught to two different pharmacy class cohorts in a 3-year PharmD program. Class one (2008-2009; n = 92) and class two (2009-2010; n = 98) were taught 36 hours of psycho-pharmacotherapy in the traditional, passive lecture and a 10-minute lecture (per hour) model, respectively. **Results:** Average student performance on summative exams was 96% using the traditional model (n=92) and 88% using the 10-minute model (n=98). Lowest scores for each method were 70% for the traditional model and 76% for the 10-minute model. Student evaluations were generally favorable both years. Time used preparing and presenting (reading) PowerPoint slides to students was reduced. Students learning from the 10-minute model more frequently reported reading textbook chapters and peer-teaching more often in student course evaluation comments. **Implications:** A lecture model in which faculty members provide brief instruction pearls and incorporates student-directed learning activities can result in similar exam performance as traditional models, while not diminishing student satisfaction. Students may report more time spent engaging in self-directed learning behavior, such as reading, summarizing chapter, and teaching peers. Also, faculty members may spend less time preparing lecture slides and may report less stress about completing comprehensive presentation notes. This alternative model and implementation barriers are described herein.

Comparing Students’ Performance on a Summative Exam Based on Enrollment in a Nonprescription Medicine Elective. Anne C. Pace, University of Arkansas for Medical Sciences, Schwanda K. Flowers, University of Arkansas for Medical Sciences. **Objectives:** To compare student performance on a self-care case included in a summative exam for students who took the elective Advanced Nonprescription Medicines course compared to those who did not. **Method:** Students are required to take a two credit hour nonprescription course and have the option to take a subsequent elective. The elective is case-based using a recitation format and utilizes an Objective Structured Clinical Exam (OSCE) as the final exam. In the fourth year, students are required to take an OSCE summative exam with 10 cases. We evaluated the performance of the students who took the elective in 2009 and compared their results on the summative exam in 2010 to the rest of the class. We compared scores on each case, including one nonprescription medicines case, as well as scores on the exam as a whole. **Results:** Students who took the Advanced Nonprescription Medicines elective scored significantly higher on the nonprescription medicines case (p<0.05) as well as two other cases not related to nonprescription medicines. On the other seven cases there was no significant difference. Students who took the elective scored significantly higher on the therapeutic checklist items and on the overall OSCE exam (p<0.05). There was no difference in the communication checklist items or Pre-NAPLEX scores. **Implications:** Taking the Advanced Nonprescription Medicines elective provides additional training to prepare students for future practice and the summative exam. Components of this course should be incorporated into the required nonprescription medicines course to provide this training to all students.

Comparison of Physical Examination Instruction in US Pharmacy Curricula. Shelley M. Jones, University of Kentucky, Jeff J. Cain, University of Kentucky, Yevgeniya Gokun, University of Kentucky, Frank Romanelli, University of Kentucky. **Objectives:** Compare physiological examination (PE) instruction at US pharmacy schools since implementation of ACPE Standards 2007. **Method:** Pharmacy Practice department chairs at all US pharmacy schools were surveyed regarding PE courses and competency expectations within their respective curricula. Descriptive statistics were used to determine PE course characteristics. Fisher’s Exact or chi square analyses were used for categorical data comparisons. Ordinal data were compared using non-parametric Wilcoxon Rank Sum test. McNemar’s test for paired data was used to determine differences in agreement. **Results:** Response rate was 56%. There were significant differences in PE course design, competency expectations, and interprofessional involvement in US pharmacy schools. There are also differences in agreement regarding the need to formally evaluate these skills for licensure and healthcare provider recognition. Sixty-one percent of new schools (inaugural graduating class of 2005 and after) teach PE as a stand-alone course, whereas 66% of established schools integrate PE into other courses (p=0.0422).
Interprofessional education in PE courses was higher in new schools (p<0.05). Students must demonstrate competence in PE techniques via hands-on exam at most schools. However, only 52% require students to apply PE findings to monitoring medication therapy. New schools were more likely than established schools to agree that PE competence should be demonstrated via OSCE for licensure and federal healthcare provider recognition (p<0.05). Implications: Differences of opinion between schools regarding competency expectations and the importance of PE skills in pharmacy practice illustrate the need for consensus. Given healthcare reform and advocacy for pharmacy provider recognition, this need is exceedingly important.

Cross-Cultural Communication Training: Student Perceptions.

Carla Y. White-Harris, University of North Carolina at Chapel Hill, Davon M. Townsend, University of North Carolina at Chapel Hill, Adam M. Persky, University of North Carolina at Chapel Hill. Objectives: To characterize student perceptions of cross-cultural communication training and to use this information to develop better instructional strategies. Method: First through third professional year students at a single school of pharmacy were asked to complete a cultural competency module. Two modules were available both of which included a video, follow-up questionnaire and a reflective activity. The instructional approach was designed to demonstrate the correlation between cross cultural communication and achieving desired healthcare outcomes. Results: A total of 332 students were surveyed during module I and 259 for module II. Over fifty percent of PharmD students reported that the film did not heighten awareness of factors related to race or make it easier to discuss race with others. Seventy-one percent believed that it was important for healthcare professionals to be culturally competent. Although the video depicted sub-optimal patient-provider interaction resulting in sub-optimal patient care and therapeutic outcomes, the students believed the providers cross-cultural communication skills were fair to all parties involved. Implications: Assessing current student perceptions regarding cross-cultural communication has helped identify the need for implementation of a more formalized and consistent curricular training module for professional students. The addition of a longitudinal cross-cultural training experience into the PharmD education experience will likely enhance student awareness of this topic and increase the success of transferring these skills into their future areas of practice.

Current Employment and Prior Degree Status: Is There an Association with First Year Academic Performance?

Tristan L. Myers, University of Arkansas for Medical Sciences, Renee M. DeHart, University of Arkansas for Medical Sciences, Zoran Bursac, University of Arkansas for Medical Sciences College of Public Health, Bri N. Morris, University of Arkansas for Medical Sciences, Jasna Vuk, University of Arkansas for Medical Sciences Office of Educational Development. Objectives: To examine whether employment during pharmacy school or prior degree status are associated with first year academic success, as measured by first-year GPA. Method: Baseline data including pre-pharmacy GPA, PCAT score, and end of P1 year GPA were collected for 118 P1 students. The same students were asked to complete an anonymous and voluntary employment survey. Results: Sixty three students (53.4%) had earned a degree prior to pharmacy school. After pre-pharmacy GPA, degree status was the second strongest predictor of P1 GPA (beta 0.23). Those with a prior degree attained a higher median mean first year GPA compared to those without (3.04 vs. 2.81, p=0.03). One hundred fifteen students (97.5%) completed the employment survey. Thirty eight (33%) survey responders reported being employed at the time of the survey. The average effort was 10 hours per week (range =2-20). While employed students earned a lower mean first year GPA than their unemployed classmates, this difference did not reach statistical significance (2.82 vs. 2.98, p=0.158). Implications: Prior work assessing the impact of a prior degree produced disparate findings. Our findings suggest an association between prior degree and higher P1 GPA. This finding may be relevant to pharmacy school admission committees. These data also suggest that employment status alone does not produce significant differences students’ academic performance during the first year.

Deaf Culture: Creating Competent Pharmacists.

Jennifer Pham, University of California San Diego, Melanie C. Nakaji, University of California San Diego Moores Cancer Center, Georgia R. Sadler, University of California San Diego Moores Cancer Center. Objectives: To design and evaluate a Deaf Cultural Competency Training module that prepares student pharmacists to become culturally competent. It is estimated that 500,000 to 1 million Americans prefer American Sign Language as their preferred method of communication. Evidence suggests that health information and care of this community have not been well served because few health professionals are proficient in American Sign Language and knowledgeable in Deaf culture. This IRB-exempted study recruited a cohort of UCSD pharmacy students to test the effectiveness of the training module. Method: 35 students completed an anonymous survey to assess their baseline experiences with the Deaf culture and related knowledge. They attended a one-hour Deaf culture presentation delivered by a Deaf community lecturer. Students’ post-lecture knowledge responses were linked to baseline responses via unique alpha numeric identifiers. T-test assessed changes in students’ knowledge of Deaf culture. Results: Students’ reporting of being moderately, very, or extremely confident in counseling a Deaf patient on a new medication increased from 3 to 19 students (p < 0.001) post-lecture. Students’ knowledge increased from a mean of 4.74 to 11.94 (p < 0.001) out of 17 questions post-lecture. Implications: Since at baseline, few students report confidence in counseling Deaf patients, professional schools need to recruit more students from the Deaf community to enrich classroom learning and prepare a cohort of linguistically proficient pharmacists. Additionally, classroom discussion can be enhanced by including a Deaf Cultural Competency training module and inviting members of the Deaf community to help students practice their training.

Design and Assessment of a Didactic Course Preparing Pharmacy Residents for Scholarship.

William A. Prescott, University at Buffalo, The State University of New York, Scott V. Monte, University at Buffalo, The State University of New York, Gina M. Prescott, University at Buffalo, The State University of New York. Objectives: To design a didactic course on scholarship for pharmacy residents and to assess its impact on resident self-reported confidence in their ability to engage in research and scholarly activity. Method: An 8-week crash course (July-August) was designed to train pharmacy residents in research and scholarship basics to better prepare them for their required research project and other scholastic pursuits. A pre- and post-course survey assessing resident confidence in their abilities relating to scholarship was distributed to pharmacy residents enrolled in the course during the 2009-10 and 2010-11 residency years. Results: A total of 34 residents participated in all aspects of the course, 21 of who completed both the course and survey (survey response rate 61.8%). The percentage of residents that were somewhat or very confident in their ability to publish their research project increased from 14.3% at baseline to 61.9% after taking the course (p<0.05). Furthermore, 76.2% of residents somewhat or strongly agreed that this course prepared them to conduct their research project and 81.0% somewhat or strongly
agreed that this course prepared them to be a more effective researcher overall. When residents were asked if didactic training in research and scholarship should be a recommended component of residency training, 76.2% somewhat or strongly agreed. **Implications:** This educational program was well received and appeared to have a positive impact on our residents’ sense of preparedness for their research project. Residency training programs, particularly those affiliated with a school of pharmacy, should consider adopting this or a similarly designed course.

**Determining the Effect of Preparation Time on Student Performance for an Objective Structured Clinical Examination.** Luke D. Stanke, Doneka R. Scott, *University of Minnesota.** **Objectives:** To determine if additional preparation time for a single station on an objective structured clinical examination (OSCE) improves student performance. **Method:** Two classes of PDIII students (2012 and 2013) completed a three-station OSCE (Asthma, Constipation, Diabetes). Students were scored at each station using an analytical checklist. The Class of 2012 (158 students) completed all stations with one minute of prep time. For Class of 2013 (168 students), prep times remained identical for the Constipation and Diabetes cases, however students received an additional ten minutes of prep time on the Asthma case. Using common checklist items from the Constipation and Diabetes stations, a “non-equivalent groups, common item mean equating design” was used to adjust for differences between the two groups. The mean of the raw scores for Asthma case were then compared using a t-test to determine if preparation time affected scores. **Results:** The mean equating design suggested an increase in total raw scores by 0.724 for the Class of 2012 to make the scores equivalent. After the equating, the mean for the Class of 2012 was 9.67 on the Asthma station, while mean for the Class of 2013 was 9.99. After adjusting scores, the t-test produced a insignificant result (p = 0.293). **Implications:** Results suggest that additional prep time for students on the Asthma case did not improve student performance on an OSCE. While suggestions that additional time for preparation between stations could improve scores, results from this analysis suggest that this may not be the case.

**Development and Evaluation of First Semester Pharmacy Students’ Medication List Retrieval Skills.** Michael C. Brown, *Concordia University Wisconsin*, Elizabeth A. Musil, *Concordia University Wisconsin*, Laurie L. Schenkelberg, *Concordia University Wisconsin*. **Objectives:** To develop and evaluate P1 students’ abilities in retrieving a medication list from a patient in the first semester of their pharmacy education. **Method:** Working with simulated patients, students completed four medication list retrieval activities throughout the semester: an introduction to the skill and rubric (non-evaluated), two medication list retrieval activities, and a medication list retrieval OSCE station. The evaluation rubric included eight components: Introduction, Allergies / Adverse Drug Reactions, Medication Therapies, Medication Specifics, Adherence, Last Dose, Communication, and Closing. Each of these components were evaluated as Likely harmful, Needs improvement, Acceptable, and Exceptional based on developed criteria. The minimum performance expectation for the P1 fall semester students was receiving no Likely harmful ratings on each of the eight components, while the practice goal was receiving only Acceptable and/or Exceptional ratings. **Results:** Over two course offerings, 155 students completed one introductory and three evaluated medication list activities. On their first evaluation, 136 (87.7%) students avoided any Likely harmful rating and 41 (26.5%) reached the practice goal. On the OSCE, 150 (96.8%) avoided any Likely harmful (p = 0.004 vs first med list) and 69 (44.5%) reached the practice goal (p = 0.001 vs first med list). **Implications:** Development of students’ medication list retrieval skills in the first semester of the PharmD curriculum was successful, with more than 95% of students avoiding harmful mistakes and almost half of students already demonstrating skills at the level expected in practice as a practitioner. Further work will investigate the development of this skill in more complex scenarios and in experiential learning.

**Development and Evaluation of Students’ Skills Critiquing Clinical Documentation.** Kassandra M. Bartelme, *Concordia University Wisconsin*, Michael C. Brown, *Concordia University Wisconsin*. **Objectives:** Pharmacists need to interpret and assess others’ documentation when caring for patients. This lab series was initiated to develop and evaluate students’ ability to assess the structure and completeness of others’ documentation. **Method:** Our 71 P2 students were introduced to documentation expectations and an evaluation rubric. They were then asked to independently critique a note which was reviewed and discussed with an instructor. Students gained further experience completing a peer evaluation and having their own documentation evaluated by instructors. To assess skill development, students subsequently critiqued two unique error-containing simulated provider notes. Combined, these two notes contained two intentional errors in the subjective sections, two in objective, five in assessment, and four in plan for a total of 923 errors for the full student cohort to find. Error types and selection were based on previous scholarship and published literature. **Results:** The students identified 779 (84.4%) errors: 135 (95.1%), 97 (68.3%), 292 (82.3%), and 255 (89.8%) in subjective, objective, assessment, and plan respectively. The top four error types not identified included 1) missing pertinent laboratory data (not identified 36 times), 2) missing assessment of goals / drug therapy problems (not identified 33 times), 3) missing rationale for plan (not identified 21 times), and 4) missing education documentation (not identified 15 times). No other error type was missed more than 9 times. **Implications:** Student performance on these activities as a whole suggested strong skill development, particularly in subjective and plan sections. The analysis also identified 4 areas that warrant focus in future educational activities.

**Development and Use of a Mobile Application to Access Drug Information (DI) Resources.** Jeffrey C. Reist, *The University of Iowa*, Alejandro V. DeAnda, *The University of Iowa*, Jeanine Abrons. **Objectives:** 1) To determine University of Iowa Pharmacy students, faculty and staff use of mobile applications to access DI resources. 2) To determine which of the drug information resources within the mobile application have been accessed by users of the mobile application. **Method:** A mobile application was created using Google® Android App Inventor to contain links to websites frequently used by University of Iowa College of Pharmacy students, faculty, and staff. The Android application was entitled the “Iowa COP app” and submitted to the Android Market to allow for downloading of the application to Android devices. An email sent to University of Iowa College of Pharmacy students, faculty and staff members via list serves announced availability of the app for download. An online survey gathered information from app users to assess current utilization in 2010-2011. **Results:** At survey administration, 152 individuals had installed the Iowa COP app on an Android device. A survey response rate of 31.6% was achieved (n = 48). Respondents were comprised of 27.1% P1s (n = 13); 25% P2s (n = 12); 22.9% P3s (n = 11); 8.3% P4s (n = 4); and 16.7% faculty or staff (n = 8). A majority of respondents used the app more than once 87.5%. Ninety-three percent of respondents agreed or strongly agreed the Iowa COP app allowed for easier access of linked resources. Sixty-seven percent of respondents accessed DI information from app users to assess current utilization in 2010-2011. **Results:** At survey administration, 152 individuals had installed the Iowa COP app on an Android device. A survey response rate of 31.6% was achieved (n = 48). Respondents were comprised of 27.1% P1s (n = 13); 25% P2s (n = 12); 22.9% P3s (n = 11); 8.3% P4s (n = 4); and 16.7% faculty or staff (n = 8). A majority of respondents used the app more than once 87.5%. Ninety-three percent of respondents agreed or strongly agreed the Iowa COP app allowed for easier access of linked resources. Sixty-seven percent of respondents accessed DI
resources; and 47% used the application to answer a DI question. During a one-month period, Lexi-Comp most commonly accessed DI resources (56.5% use), followed by Clinical Pharmacology, PubMed, Micromedex, AHFS, and IDIS (at 45.7%; 19.6%; 15.2%; 6.5%; and 4.3%, respectively). The application was not used by 28.3% within a one-month period. Implications: A majority of users surveyed found the Iowa COP Android application made access of DI resources easier. A majority of respondents had accessed DI resources (~2/3). A frequent use of the app was to answer DI questions. Lexi-Comp and Clinical Pharmacology were the most frequently used DI resources.

Development of a Clinical Skills Center for a Pharmacy Satellite Campus Facilitates Symmetric Student Assessment. Jennifer L. Robertson, University of North Carolina at Chapel Hill, Donald J. Woodyard, University of North Carolina at Chapel Hill, Kelly L. Scolaro, University of North Carolina at Chapel Hill. Objectives: Health professional schools are expanding to satellite campuses to better meet the needs of rural areas. Satellite campuses are required to demonstrate comparability with main campus but few published blueprints exist to guide this process. Our objective is to describe the process of creating a clinical skills center at a satellite campus and assessment of student outcomes to ensure comparability. Method: A proportionately sized clinical skills center, modeled after the center on the main campus, was built on the satellite campus. The five exam room center was outfitted with the B-Line Clinical Skills System for recording video and student checklists. Standardized patients (SPs) were recruited from the local community and trained using collaborative video teleconferencing and role play with lab faculty on both campuses. Faculty examined student scores and responses to a post exam survey to ensure similar student experiences regardless of campus location. Results: Since Spring 2011, two standardized patient interviews and two Objective Structured Clinical Exams (OSCE) have been conducted on the satellite campus. Exam success was measured using student survey results, subjective faculty assessment of SPs’ performance, comparability of student scores on both campuses, and proper technology function on exam day. No difference in experience has been noted on the satellite campus. Implications: Expansions of pharmacy programs to satellite locations necessitates the development of symmetric assessment procedures in order to avoid requiring periodic student travel to the main campus. If cost of implementation is not a barrier, acceptable assessment experiences are achievable for all campuses.

Development of a Pharmacy Student-Run Smoking Cessation Clinic in Collaboration with University Human Resource Administrators. Suzanne M. Galal, University of the Pacific, Joseph A. Woelfel, University of the Pacific, Robert Gapuz, University of the Pacific, Christian Ngo, University of the Pacific, Shannon McNary, University of the Pacific. Objectives: To describe the development of a pharmacy student-run smoking cessation clinic for University staff and faculty. Method: Pharmacy practice faculty, in collaboration with University human resource administrators, initiated plans for an on-campus smoking cessation clinic for University staff and faculty. As part of an independent study, students worked closely with faculty to design clinic policies and procedures and conduct marketplace research. A budget proposal was developed and submitted to human resources administrators. Campus health fairs promoted the program and recruited patients. As part of a first year student-required practicum, a 2 week module on smoking cessation principles, methods, pharmacotherapy, and simulated patient counseling was conducted. Students were assessed in their knowledge and abilities. Those passing the competency examination were then deemed eligible for participa-

Differences in Dietary Supplement Use Between College Student Athletes and the General Student Body. Brooke Lowry, St. John Fisher College. Objectives: The objective was to compare the use of and attitudes toward dietary supplements by NCAA regulated student athletes, college students involved in club sports, and college students not formally involved in organized athletics. Method: A 16-item survey on dietary supplement use was conducted among 3 undergraduate groups at the University of Pittsburgh. The survey questions addressed demographics, use of specific dietary supplements, reasons for supplement use, sources of information about supplements, and views about dietary supplement use. Results: 422 surveys were completed: 135 Division 1 athletes, 116 club sport athletes, and 171 non-athlete students. A total of 60.3% of participants reported using dietary supplements in the last 6 months. The top 5 dietary supplements used were multivitamins, vitamin C, protein, calcium, and vitamin D. The top 5 reasons for use among all participants were to maintain health, prevent illness, provide extra vitamins/minerals in their diet, provide them with more energy and to treat an illness or health condition. However, Division 1 athletes were more likely to take dietary supplements to enhance performance than the other study groups (p = 0.04). Implications: Use of dietary supplements was common in the study population. Reasons were similar among groups except that Division I athletes reported performance enhancement as a top reason, which differed from the club sport athletes and non-athlete students. The results of the survey show that college students are taking supplements and suggest that proper education about these products is needed.

Directed Self-learning in Skills Lab: An Avenue to Introduce Complex Pharmacotherapeutic Concepts. Heidi N. Anksorus, University of North Carolina at Chapel Hill, Roy Hawke, University of North Carolina at Chapel Hill, Kelly Martin, University of North Carolina at Chapel Hill/ UNC Hospitals, Kelly Scolaro, University of North Carolina at Chapel Hill. Objectives: To assess student perceptions of a new integrated educational approach to viral hepatitis pharmacotherapy. Method: Previously, hepatitis was solely taught through didactic learning in the pharmacotherapy course in the third year at UNC Eshelman School of Pharmacy. In Fall 2011, a new integrated approach involving pharmaceutical care lab was instituted. Directed self-learning activities were used to introduce basic concepts such as hepatic lab values and serologies, after which students completed a patient case. Lab activities were followed by an in-class quiz to assess student knowledge prior to didactic lectures, case discussion, and active learning with clinical experts. Students were then surveyed in lab using Turning Point about their perceptions and comfort with this new integrated approach to hepatitis. Results: The post-lab survey revealed 95% of students felt comfortable using the resources provided. 35% agreed or strongly agreed self-learning lab activities provided foundational content prior to the formal therapeutics lectures/activities and 22% agreed or strongly agreed lab activities allowed them to feel more prepared for the class quiz (mean score 69.1 ± 14.6). 41% felt faculty should use lab time to introduce therapeutics and 23% believed this approach allows for more active learning during the pharmacotherapy course. Implications: This new educational approach used lab activities to assist students with understanding basic therapeutic principles prior to more complex pharmacotherapy activities. Student perceptions were mixed about this new approach. Further study is needed to determine if this approach prepares students to be taught complex disease states at a higher level in the pharmacotherapy courses.

Dynamics of an Academic Administrative Fellowship in Diversity. Carla Y. White, University of North Carolina at Chapel Hill, Davon M. Townsend, University of North Carolina at Chapel Hill, Adam M. Persky, University of North Carolina at Chapel Hill, Jo Ellen Rodgers, University of North Carolina at Chapel Hill. Objectives: To explore the impact of an Academic Administrative Fellowship in Diversity. Method: A twelve-month Academic Administrative Fellowship was implemented in the Office of Recruitment, Development and Diversity Initiatives at the UNC Eshelman School of Pharmacy. This postgraduate opportunity was designed to provide a promising scholar, interested in a career in pharmacy academia, with unprecedented exposure and training in the areas of management, program development, teaching, scholarship and professional service. Results: The fellow was
highly engaged in the recruitment and retention of underserved and underrepresented students. Responsibilities included teaching, facilitation of patient case discussions, development of continuing education modules for pharmacists and completion of an ACPE accredited teaching certificate program. Through recruitment, academic advising and mentoring over eighty professional students, and advising five student organizations and programs, the fellow was able to develop meaningful relationships with individuals from diverse backgrounds and experiences, and contribute to the development of a diverse and inclusive environment. Implications: Despite many years of efforts to diversify the academy, people of color remain significantly underrepresented in academia. Postdoctoral academic fellowships with a concentration in diversity can play a critical role in facilitating the development of world-class scholars and enhancing opportunities to recruit and retain highly qualified faculty that reflect the diversity of our society. Furthermore, an academic administrative fellowship in diversity can contribute to providing a richly diverse intellectual and social environment for current students, strengthening communities and the workplace, and enhancing America’s economic competitiveness.

**Economic Evaluation of Clinical Interventions from an Integrated Internal Medicine and Ambulatory Care APPE.** Michael Gonyeau, Northeastern University, Maureen McQueney, Northeastern University. Objectives: Most APPEs occur from 4-6 weeks, allowing a narrow window for students to feel comfortable and confident in their clinical responsibilities before moving on. This affects their ability to accurately and completely document clinical interventions. Our objective was to conduct an economic analysis of clinical interventions documented during an integrated 12 week APPE model compared to previous non-integrated APPE data and to quantify value added to students, preceptors and institutions with this model. Method: A 6 week ambulatory care (AC) and internal medicine (IM) APPE were integrated into a longitudinal 12 week APPE comprised of a fluid structure where students transitioned from inpatient to outpatient services multiple times within the 12 week structure and increased student exposure to patients transitioning from inpatient to outpatient care. Clinical intervention documentation was required via a web-based system and data from the integrated APPE was compared to previous students from each preceptor from stand-alone AC and IM rotations at the same hospital. Specific comparisons included compare adverse drug events (ADEs) and medication errors (MEs) prevented, as well as an economic evaluation to assign cost savings associated with these data. Results: Twelve integrated APPE students documented 1984 interventions vs. 873 from 12 students completing separate APPEs with the same preceptors (p <0.001). Intervention categories remained consistent with a significant increase in medication histories performed (11.5% to 18.3%) and intervention level of significance increased in the integrated model. 1053 ADEs were prevented (936 integrated vs. 117 pre-integration, p<0.001) associated with a total cost savings of $332,985. Similarly, 274 MEs were prevented (168 integrated vs. 108 pre-integration, p=0.07) associated with a cost savings of $34,012. This averages $26,403 cost savings per student in the integrated model vs. $4086 pre-integration (p<0.001) over a 12 week period. Implications: An integrated APPE decreases orientation time for students and preceptors, increases interactions with patients, increases clinical intervention documentation and results in increased prevention of ADEs and MEs, resulting in increased cost savings.

**Evaluating Non-healthcare Secondary Educators About the Field of Pharmacy: Assessment of Baseline Knowledge.** Adriana Cabrera, Massachusetts College of Pharmacy and Health Sciences-Worcester, Kimberly A. Pesaturro, Massachusetts College of Pharmacy and Health Sciences-Worcester, Morgan R. Comee, Massachusetts College of Pharmacy and Health Sciences-Worcester, Helen Pervanas, Massachusetts College of Pharmacy and Health Sciences-Worcester, Valerie A. Coppenrath, Massachusetts College of Pharmacy and Health Sciences-Worcester. Objectives: Pharmacy educators participated in a career fair to educate non-healthcare secondary educators about becoming a pharmacist and career options in the field. Secondary school teachers and counselors assist with and influence student college and career choices. It is imperative to inform these educators in order to assist them with educating students about pharmacy careers. The purpose of this study was to assess secondary educator’s baseline knowledge of the profession of pharmacy and educational requirements. Method: A five-item multiple choice survey was administered to participants prior to receiving education to assess baseline knowledge. Education was provided utilizing informative posters and a five-minute presentation by pharmacy educators relaying information about pharmacy career opportunities and educational requirements. To assess for intervention effectiveness, participants were invited to repeat the initial survey and results were compared. Results: 34 pre- and 18 post-intervention surveys wereanalyzed. Survey items pertaining to “years of college required” and “type of degree conferred” were the most likely to be answered incorrectly. Overall, the percent of correct responses improved significantly from 78% to 90% (p = 0.042) in the pre- and post-intervention surveys respectively. Individually, each survey item showed improvement in percent of correct responses between the pre- and post-intervention surveys. Implications: Deficiencies exist in secondary educators’ knowledge and perceptions of the field of pharmacy, especially as it pertains to the educational requirements of becoming a pharmacist. Educational interventions led by pharmacy educators and pharmacists may assist with closing this knowledge gap to improve the accuracy of information reaching those considering careers in pharmacy.

**Effective Class Scheduling for a Multi-campus, Accelerated 3 Year Pharm.D. Program.** Lauren M. Garton, South University, Heather F. DeBellis, South University, April Jones, South University. Objectives: Determine the most effective time to schedule classes to engage students. Method: Survey questions were formulated assessing gender, age, program year, campus, previous degrees, class start times, days class meets, class end times, and when more rigorous material should be presented. Topics were formulated into a 10 question online survey and assessed first and second year students on both campuses. Results: The majority of the 101 participants were female (74.3%). Most were <30 years old and 53.5% were in their first year of the program. Participation from the second campus was much weaker (17.8%). Of the polled participants, 37.6% had completed > 2 years of prerequisites while others have varying levels of degrees. When asked about class, 84.2% wanted class to start between 8am - 9am and 66.3% wanted class to end at 2pm. Course material is best learned between 8am – 11am per 84.2% and hard material should be taught between 9am – 10am per 59.4%. Students preferred classes to be three days a week with a 67.3% response rate and 88.1% of the participants did not want to have class on Friday. When asked about what time they wake up, 58.4% responded between 6am – 8am. Implications: Classes now start between 8:00am and 8:30am and end on Friday by 12:30pm. Lectures and classroom time for core curriculum are scheduled during the morning hours while electives and lab courses are scheduled in the afternoon. Higher credit-hour courses have been extended over multiple days instead of longer duration.

**Effects of Multiple Choice Item-writing Guideline Utilization on Item and Student Performance.** Adam Pate, The University of Louisiana at Monroe, David J. Caldwell, The University of Louisiana at Monroe.
Objectives: To measure differences in student-performance on multiple-choice items in two scales: guideline based (standard, SS) and non-guideline based (nonstandard, NSS) Method: All test items and item statistics for the four examinations given in the fall third year cardiology module were analyzed for adherence to multiple-choice item-writing guidelines as proposed by Haladyna, et al. Two faculty members independently categorized each exam question into two scales: SS and NSS. Specific guideline deviations were recorded for each item. Variance in classification was resolved using a consensus process. Item statistics recorded include percent of students answering correctly (P) and point biserial correlations (rpb). Results: A total of 187 questions were analyzed. 48.1% (n=90) were classified as SS and 51.8% (n=97) as NSS. Overall, 17 of the 31 guidelines were breached with the most frequently cited being: 1) Minimize the amount of reading in each item and 2) Avoid all-of-the-above, with 24 occurrences each. The majority of guideline deviations involved writing the choices. Mean Ps between SS and NSS were 0.763 and 0.837 (p = 0.01), respectively. Mean rpbs were 0.242 on the SS and 0.255 on the NSS (p = 0.6). Implications: Our analysis indicates that breaching multiple choice writing guidelines negatively affects student performance and does not correlate to increased item discrimination. It is likely that covariates exist that would help explain the variation in item difficulties, but these were not identified in this study. Further research into this area is warranted.

Evaluating the Online Networking Relationships Between Preceptors and Pharmacy Students. Timothy R. Ulbrich, Northeast Ohio Medical University, Anne H. Metzger, University of Cincinnati, Kristen F. Sobota, Ohio Northern University, James W. McAuley, The Ohio State University Objectives: To describe pharmacy preceptor use of Facebook and compare the perspectives of those with and without Facebook profiles regarding student-preceptor relationships Method: A survey was sent electronically to pharmacy practice preceptors (n = 2523) at four colleges of pharmacy asking them to provide their opinions on the student/preceptor Facebook relationship. If respondents answered “yes” to having a Facebook profile, they were asked 12 questions. If respondents answered “no”, they were asked 2 questions. Demographic data were collected on all respondents. Two reminder emails were sent before the survey closed after 24 days. Results: Of the 612 total respondents (response rate = 24.3%), 413 preceptors (67%) currently maintain a Facebook page, while 199 (33%) do not. The majority of respondents (93%) use Facebook for social networking, 27% use it for professional networking or campaigning, and 6% use it to collaborate with colleagues. Fifty-four percent of the preceptors are not friends with students on Facebook, while 46% are, although 10% of responders do limit what the student can view on their profile. Responses were highly varied when asked how they would handle a ‘friend request,’ including accept it right away, after some thought, or simply decline it. Implications: As the use of these social media sites increase, the need arises for preceptors to discuss and/or clearly define the appropriateness of social networking relationships without compromising the line between the personal and professional relationships with pharmacy students.

Evaluating the Use of Virtual Patients (VpSim) versus Traditional Problem-Based Learning in Advanced Professional Experience Rotations. Sara A. Al-Dahiri, Xavier University of Louisville, Kendrea A. Bryant, Xavier University of Louisiana, Kathleen B. Kennedy, Xavier University of Louisiana, Donna Robinson, Xavier University of Louisiana Objectives: To evaluate the efficacy of faculty-led problem based learning versus virtual simulated patient case in fourth-year pharmacy students. Method: IRB approval was received. The study was designed as a supplemental patient-based learning case to the APPE experience (N=80 students). Students were randomly assigned to participate in branched case learning using virtual cases (VpSim platform) or faculty led problem based learning. A pre-and post-test assessment and a 12-question opinion survey were used (1 = Strongly Disagree to 5 = Strongly Agree). The on-line virtual case was composed of several learning nodes that simulated a real hospital patient case. In the seven-member small group problem-based learning, students worked through the exact same case with faculty mentoring. The test scores and opinion survey were analyzed using ANOVA analysis and logistic regression. Results: There was no significant difference found (VpSim versus PBL) in the post-test scores (45% versus 49%) or the mean percent increase from base pre-test score (0% versus 18%). A significant difference was observed on the Likert score results (VpSim versus PBL) with regard to student satisfaction with the learning platform introducing new information (4.2 vs 4.5) (p = 0.00) and reinforcing previous learning (4.2 vs 4.4) (p = 0.01). Implications: The authors wanted to assess student’s acquisition and application of branching case methods to prepare for the national licensure examination. Problem-based learning is known to have success in preparing students to focus learning on core information relevant to real clinical scenarios and adaptive feedback and is a slightly preferred method to individual virtual patient scenarios.

Evaluating the Effectiveness of a SoTL Collaborative Group. Aimee F. Strang, Albany College of Pharmacy and Health Sciences, Patricia L. Baia, Albany College of Pharmacy and Health Sciences Objectives: A scholarship of teaching and learning (SoTL) support group was created to assist faculty with research endeavors centered on teaching and learning. The goals were to increase faculty participation in scholarly activity and also support non-tenure track faculty with research. Method: The SoTL group was led by the Assistant Dean for Academic Affairs and Curricular Assessment. Participation was voluntary and all faculty were invited to join. There were five meetings held during the fall semester of 2011 that provided a forum to brainstorm ideas, create collaborations and provide feedback on colleague’s work. A survey was administered to measure the impact of the SoTL support group on abstract submission to the 2012 Annual AACP meeting. Results: Twenty-six faculty (19 non-tenure, 7 tenure/tenure-track) and 6 administrators (chairs, program directors) accepted the invitation to join the group. Thirteen participants (50%) responded to the survey. Of the respondents, 30% were tenured or tenure-track faculty and 70% were non-tenure track faculty. Half of the participants attended more than one meeting. Five of the 13 respondents (38%) submitted abstracts to AACP. Two (40%) attributed their submissions completely to the support they received from the SoTL group. Motivation, friendly peer pressure, encouragement and instruction on research methodology were cited as benefits received from the SoTL collaborative. Implications: A SoTL support group is an effective way to encourage faculty participation in scholarly activity and support non-tenure track faculty research. Future initiatives will focus on continuing the momentum to participate in SoTL activities and creating partnerships and collaborations between faculty.

Evaluation of Reducing the Number of Faculty and Instituting Weekly Quizzes in a Team-Taught Pharmacokinetics Course. Gregory J. Hughes, St. John’s University, Manouchkathe Cassagnol, St. John’s University, Candace J. Smith, St. John’s University, Mary Ann Howland, St. John’s University, Donna Sym, St. John’s University, Gladys El-Chaar, St. John’s University Objectives: To determine if reducing the number of faculty teaching or addition of weekly quizzes
improves the academic outcome of Doctor of Pharmacy students in a clinical pharmacokinetics course. **Method:** Four sections of a clinical pharmacokinetics course were divided according to number of faculty teaching the course and the administration of weekly quizzes. All sections were identical regarding units of instruction and learning objectives. Two sections were taught by six faculty while the other two were taught by three of those faculty. Two course sections received weekly quizzes; one with three faculty and one with six faculty; creating a two-by-two factorial design. Student’s t-test was used to determine statistical significance between groups. The mean final grade (standard deviation, SD) of classes taught by six versus three faculty was 80.45 (7.64) and 82.15 (8.68), respectively (p=0.13). The mean final grade (SD) of classes with student quizzes versus those without quizzes was 82.41 (8.45) and 80.37 (7.9), respectively (p=0.08). When comparing final grades in the three faculty sections, the mean grade with quizzes versus without quizzes was 83.75 (8.46) versus 81.19 (8.72), respectively (p=0.12). When comparing final grades in the six faculty sections, the mean grade with quizzes versus without quizzes was 81.33 (8.27) versus 79.53 (6.75), respectively (p=0.24). **Implications:** Although our results did not meet statistical significance, the results show a trend suggesting students may perform better when taught by fewer faculty or receiving weekly quizzes.

**Evaluation of a Strategy to Build Competency in a Drug Literature Evaluation Course.** Shannon L. Reid, University of Minnesota, Kristin K. Janke, University of Minnesota, Jenifer L. Morgan, University of Minnesota. **Objectives:** To implement a series of educational interventions designed to foster drug literature evaluation skills and to assess students’ confidence and perception of change in skills. **Method:** Pharmacy students enrolled in the Drug Literature Evaluation course participated in the following interventions: six in-class article review, written article review, student-led journal club, and a final written exam. Students rated their skills pre- and post-course using an End-of-Course Self Assessment (ECSA). A Journal Club Self Assessment (JCSA) was conducted after the student-led journal club. Each assessment was based on seven drug literature evaluation skills (DLES), and participants rated their skills using a five point rating system of Novice, Developing, Skilled, Facilitating/Leading, or Educating. **Results:** One hundred and sixty-six students responded to both self-assessments. In the ECSA, 46% of respondents reported describing study design as their strongest skill while 23% reported identifying ways to improve study design as their weakest skill. Determining impact on clinical practice and interpreting clinical significance were reported as skills that grew the most (22% and 21%, respectively). In the JCSA, 56% of respondents rated their ability in preparing discussion questions as “skilled” although 32% of respondents stated that formulating discussion questions was the hardest component of the journal club to complete. All seven DLES had statistically significant changes (p<0.001) pre- to post-course. However, average ratings post-course were less than “skilled” for all DLES. **Implications:** Although statistically significant improvements in skills were made, interventions need to be incorporated across a curriculum to improve students’ skills and confidence further.

**Evaluation of a Simulated Hospital Pharmacy Module Using an EMR in a Pharmacy Skills Laboratory.** Jennifer Kirwin, Northeastern University, Margarita V. DiVall, Northeastern University, Christina Guerra, Northeastern University, Todd A. Brown, Northeastern University. **Objectives:** To evaluate the effects of a simulated hospital pharmacy module using an electronic medical record (EMR) (Meditech, Westwood, MA) in a skills laboratory course on student confidence and abilities to perform tasks typical of a pharmacist. **Method:** The course contained a module that simulated typical tasks of a hospital pharmacist. All students were asked to complete web-based pre- and post-surveys about their work experience and confidence using EMRs; reviewing prepared sterile products; performing medication reconciliation, discharge counseling and patient presentations. Twenty three attitudinal questions were asked using a 4-point Likert scale. Anonymous unique identifiers linked pre- to post-survey results. The Related-Samples Wilcoxon Signed Rank test was used to compare pre- and post-responses. Course assessments evaluated covered competencies. **Results:** Ninety seven percent and 81.5% of students completed pre- and post-surveys, respectively. 97% of respondents reported full-time hospital internship experience. 73% had EMR experience. On the pre-survey, mean ranks ranged from 1.48 to 2.92, indicating low comfort/confidence with typical hospital pharmacist tasks. Mean ranks increased on the post-survey for all questions, ranging from 1.97 to 3.39 (p<0.001 for all comparisons) indicating moderate comfort. Course assessments confirmed student achievement of covered competencies. **Implications:** Despite substantial hospital internship experience, students reported low comfort/confidence with typical hospital pharmacist activities. Students’ comfort significantly improved after completion of the module. This demonstrates that laboratory simulation can improve the comfort and skills required in practice.

**Evaluation of an Elective Course on Postgraduate Residency Training.** Beth Phillips, The University of Georgia, Catherine A. Bourg, The University of Georgia, Bradley G. Phillips, The University of Georgia. **Objectives:** A novel elective course to educate and prepare students for postgraduate residency training was developed to meet: (1) increased demand by students, and (2) expectations by professional organizations to complete residency training. The purpose of this project was to evaluate the implementation and delivery of the course to third year pharmacy students. **Method:** The course was taught over two campuses and developed utilizing short lectures, group discussions and active learning strategies, such as small group exercises, mock match, and mock interview. All faculty with significant residency precepting experience on all campuses were invited to participate in delivering the course. Students were asked to self-assess their intentions, understanding and abilities related to residency training at the beginning and end of the course. All students reported they would recommend the course to their classmates. **Objectives:** To
assess community pharmacists’ knowledge of oral antineoplastic agents and assess their confidence when counseling patients taking oral antineoplastic agents. **Method:** A survey was developed to assess community pharmacists’ knowledge of 11 oral antineoplastic agents. This survey evaluated how confident pharmacists were when counseling patients about these medications. A list of Arkansas community pharmacies (n = 712) was obtained from the Arkansas State Board of Pharmacy and randomized. The pharmacist on duty was contacted for a phone survey; 246 pharmacists completed the survey. This study was approved by the UAMS IRB. **Results:** Overall confidence in counseling patients varied with each antineoplastic agent. Pharmacists reported which antineoplastic agents they had dispensed in the last 6 months. There was not always an increase in confidence in counseling patients with the agents that had been dispensed recently compared with those agents that pharmacists had not dispensed recently. Seventy-seven percent of pharmacists reported their main barrier to counseling as being their level of training or knowledge. The majority of pharmacists (79%) were not confident in their ability to handle an influx of oral antineoplastic agents. **Implications:** Approximately 10% of chemotherapy is given orally. It is estimated by 2013, this rate will increase to 25%. This study identified an overall lack of pharmacist confidence in counseling patients about oral antineoplastic agents. One of the main barriers identified is the lack of knowledge. This data provides baseline information needed to launch educational programs in the curriculum and continuing education programs to improve overall confidence among community pharmacists.

**Evaluation of Interprofessional Learning Through a Patient Case Simulation.** Susanne G. Barnett, University of Wisconsin-Madison, Paula A. Jarzemsky, University of Wisconsin-Madison. **Objectives:** To evaluate pharmacy and nursing students’ perception, attitudes, and readiness towards interprofessional learning before and after completion of an interdisciplinary simulation exercise. **Method:** Pharmacy (n = 16) and nursing (n = 21) students completed a survey before and/or after participating in a patient case simulation, using SimMan® technology, where they formed five interdisciplinary groups of 7-8 students. Survey questions were adapted from a previously validated interprofessional survey and queried team-work and collaboration, professional identity, and roles and responsibilities to assess perceptions, attitudes, and readiness towards interprofessional learning. Questions used a Likert scale ranging from strongly disagree or not important to strongly agree or extremely important. Between group assessments were performed using paired and unpaired t-tests. **Results:** In general, combined discipline baseline survey scores were high (means ranged from 4.0-4.9 on a 5-point scale). No statistical differences in baseline compared to post-simulation were found in the professional identity and roles and responsibilities subgroups. Student agreement that respect and trust be present in order for small-group learning to take place decreased following the simulation (mean [95% CI]) (4.8 [95% CI 4.5-5.0] (n = 23) versus 4.3 [95% CI 3.9-4.7] (n = 25), p = 0.04). When students compared importance of interprofessional learning before and after the simulation, pharmacy students reported a numerically increased importance (n = 13, p = 0.053) while nursing students did not (n = 12, p = 0.166). **Implications:** In this pilot study, implementation of an interprofessional simulation did not appear to significantly alter students’ perception and attitudes towards interdisciplinary learning. However, numerical trends were found between pharmacy and nursing student groups.

**Evaluation of Student Performance at Didactic Courses at a School of Pharmacy.** Rabaa Al-Rousan, University of Charleston, Mary L. Euler, University of Charleston. **Objectives:** To evaluate the performance of students at a School of Pharmacy in pharmacy science courses, pharmacy practice didactic, pharmacy administration courses, laboratory courses, and electives. **Method:** The grades of first- to third-year students from the University of Charleston School of Pharmacy in 2011 (Fall/Spring) were included. Reports of final course grades have been used to calculate mean grade point average (GPA) within individual courses. For comparison purpose, mean GPA was then determined for each academic category. Grade point averages are reported as means ± SD. **Results:** Mean GPA of pharmacy science category was significantly lower than that of the other academic categories in both Spring (2.71 ± 0.16) and Fall (3.06 ± 0.31) semesters (p < 0.05). In contrast, mean GPA of electives and laboratory courses were the highest in both Spring (3.77 ± 0.33 and 3.54 ± 0.36, respectively) and Fall semester (3.77 ± 0.40 and 3.94 ± 0.04 respectively). Mean GPA for pharmacy practice didactic (Spring: 3.28 ± 0.45, Fall: 3.29 ± 0.14) was only slightly lower than that of pharmacy administration courses (Spring: 3.54 ± 0.36, Fall: 3.38 ± 0.00). **Implications:** These findings suggest that student performance can vary significantly among academic disciplines in pharmacy education. Further evaluation is warranted to determine if similar variations are recognized at a national level within pharmacy education and the reasons for any variations.

**Evaluation of the Development of a Standardized Patient Program.** Janice R. Frueh, Southern Illinois University Edwardsville, Stacey Thacker, Southern Illinois University Edwardsville, Miranda J. Wilhelm, Southern Illinois University Edwardsville, Carrie Vogler, Southern Illinois University Edwardsville, Melanie J. Hicks, Southern Illinois University Edwardsville, Erin M. Timpe, Southern Illinois University Edwardsville. **Objectives:** To describe and evaluate the process and outcomes from building an initial standardized patient (SP) program in a school of pharmacy not associated with an academic health center. **Method:** Recruitment efforts occurred from June-September 2011 via email list serves to university faculty/staff, alumni, and retirees, outreach to a local hospital volunteer program, and by word of mouth from school of pharmacy faculty/staff. From demographic and availability information in completed casting forms, a subset of SPs were selected and assigned to Objective Structured Clinical Exam (OSCE) stations. Each SP completed a 2.5 hour training session prior to and a 50 minute refresher session on exam day. All SPs were volunteers, signed a consent form prior to training, and completed a satisfaction survey after the exam. **Results:** Thirty completed SP casting forms were received. SPs ranged from 22 to 88 years old. Fourteen (47%) SPs were recruited via email list serves, 5 (17%) from the hospital volunteer program, and 11 (37%) by word of mouth. Twenty-one SPs participated in the OSCEs. Eighteen (86%) strongly agreed/agreed communication and training sessions were sufficient, and overall the experience was enjoyable. All respondents indicated they would participate again. **Implications:** Initial recruitment efforts and volunteer SP experiences were positive. These results will be used in future recruitment and expansion efforts and to enhance the current SP training program. This experience may assist schools/colleges of pharmacy in similar academic environments that are interested in starting a SP program.

**Evaluation of Top 200 Drug Information Exercises in a Pharmaceutical Care Lab Curriculum.** Jennifer A. Witzman, University of North Carolina at Chapel Hill, Kelly L. Scolaro, University of North Carolina at Chapel Hill. **Objectives:** This study evaluated the effectiveness of top 200 drug information exercises in the pharmaceutical care lab (PCL) curriculum at UNC Eshelman School of Pharmacy. **Method:** A prospective survey was distributed on-line via Qualtrics to fourth year (PY4) students and advanced pharmacy practice experiential (APPE) preceptors. The student survey inquired about perceptions...
of the usefulness and appropriateness of current top 200 drug information exercises and assessments. The preceptor survey inquired about preparedness of students for APPEs rotations. An incentive, in the form of the opportunity to be included in a drawing for gift cards, was offered for completion. Survey data were analyzed via Qualtrics using descriptive statistics. Results: The response rates for the student and preceptor surveys were 43.7% (73/167) and 15.1% (128/850), respectively. 93% of students responded that current exercises were useful in helping to learn the material and 86% felt prepared at the start of APPEs with regard to top 200 drug information. Preceptors and students agreed that therapeutic indication was the most useful information for practice. 40% (35/88) of preceptors that precept for multiple schools felt UNC students were better prepared than students from other schools. Implications: The information gained from this study helped identify the strengths and weaknesses of the current educational process. Areas of improvement and future focus could include dosing information and major drug interactions. Also, since there is little published information available regarding best practices for teaching top 200 drug information, the results of this study may be useful for other institutions.

Evolution of a Communications Course: Incorporating Active-Learning Techniques in a Dual Campus Accelerated Curriculum Program. Keri C. Anderson, South University, Lauren M. Garton, South University, William P. Wynn, South University, Earle W. Lingle, South University. Objectives: To restructure the South University Communications course to incorporate active-learning techniques in a dual campus accelerated curriculum program to enhance students’ ability to communicate with patients, healthcare professionals, colleagues, and future employers. Method: Revisions included developing rubrics to evaluate projects objectively across campuses, creating a cross-campus peer evaluation tool, and utilizing a Companion for submission of work, administration of quizzes, and returning graded assignments. Active-learning projects included counseling, creating a professional poster, composing a newsletter for healthcare professionals and patients, presenting with PowerPoint, evaluating peers, providing recommendations to a healthcare provider, producing a curriculum vitae, and writing a letter of intent for a job application. Additionally, a medical terminology self-study was incorporated to facilitate understanding and appropriate dissemination of medical information. Results: Students were surveyed on each campus to determine the value of each applied learning approach. Combined survey data demonstrated an improved ability to communicate with each assignment (% agree): patient counseling (94%), professional poster (75%), newsletter (87%), PowerPoint presentation (95%), peer evaluation (82%), therapeutic recommendation (94%), curriculum vitae and letter of intent (88%), and medical terminology self-study (93%). Students indicated the assessment of individual group member efforts would benefit the course in the future (92%). Implications: The integration of active-learning techniques in the Communications course enhanced students’ ability to communicate with patients, healthcare professionals, colleagues, and future employers using various modes of communication. Incorporating practical communication assignments enhanced student pharmacists’ ability to communicate in a dual campus accelerated curriculum program.

Examining the Effectiveness of a Women’s Health Elective Course. Karen L. Whalen, University of Florida, Renee L. Rose, University of Florida. Objectives: To evaluate the impact of a Women’s Health elective on students’ self-reported ability-based outcomes and self-efficacy in performing behaviors pertinent to the care of women. Method: Third-year pharmacy students completed a paper-based assessment tool on the last day of class in 2010 and 2011. The assessment utilized a single group posttest design with a retrospective pretest. Students ranked their knowledge and/or ability before and after the course for ten ability-based outcomes using a five-point Likert scale (1 = poor, 5 = excellent). Responses were analyzed using the Wilcoxon signed-rank test. In addition, students also rated their self-efficacy in performing nine key behaviors pertinent to the care of women using a 6-point Likert scale (1 = very unconfident, 6 = very confident). Results: There was a statistically significant change in knowledge and/or ability for all ten ability-based outcomes (p < 0.001) in both the 2010 (n = 56) and 2011 (n = 95) cohorts. The majority of students in both cohorts reported being confident or very confident in their ability to perform most of the nine key behaviors. However, 55.4% of the 2010 cohort and 57.9% of the 2011 cohort were only somewhat confident in their ability to identify key women’s health drug-related problems when presented with an unfamiliar clinical scenario. Implications: The Women’s Health elective was effective in achieving ability-based outcomes and enhancing self-efficacy in performing behaviors related to the care of women. Based on the findings, the course will be refined to include more clinical scenarios during the lecture recordings and live discussion sessions.

Expanding the Role of a Pharmacist into a Sexually Transmitted Infection Provider. Sara J. Deppe, University of Missouri-Kansas City, Brooke Y. Patterson, University of Missouri-Kansas City, Mark T. Sawkin, University of Missouri-Kansas City, Chessa R. Nyberg, University of Illinois at Chicago. Objectives: With health care reform on the horizon, the role of a pharmacist is quickly evolving, making it necessary for pharmacists to sharpen their clinical skills to accurately serve their patients. With one in four Americans currently infected with an STI, pharmacists are readily available to help decrease transmission of these STIs and their long-term sequelae. This study explored patient perceptions of undergoing STI screening and treatment provided via pharmacist. Method: To assess patient attitudes toward pharmacists as STI providers, patients who presented to an urban free health clinic for STI screening and testing were given a confidential survey. This survey was comprised of 14 questions relating to STI testing and the acceptability of a pharmacist as their provider. Results: From this survey, patients showed overwhelming acceptance of a pharmacist as their STI treatment provider (75.1%). The responsibilities they were comfortable with a pharmacist performing included running a urine screen (94%), performing a physical exam (78%), diagnosing and treating STIs (97.3%), and discussing STI test results (92.9%). Patients also approved of pharmacists working under a collaborative practice agreement with a physician (96.2%). Implications: Acceptance by patients of a pharmacist-provider for STI screening may lead to adoption of STI screening clinics by pharmacists. This would decrease barriers to treatment (i.e. stigma, lack of access) and increase accessibility as well as identification of those infected with STIs ultimately leading to a decrease in the spread and long-term sequelae of untreated STIs.

Exploring the Influence of Team Based Learning on Perceptions of Team Value. Angela K. George, University of Minnesota, Nichole M. Kulinski, University of Minnesota, Kristin K. Janke, University of Minnesota. Objectives: To assess student response to Team Based Learning (TBL) in second year pharmaceutical care lab lectures, including perceived value, team functioning and preferences. Method: Students responded to a pre-course survey on the value of teams. Ten lecture sessions were delivered using a standardized format consisting of: 1) pre-lecture preparation on the topic, 2) Individual Readiness Test (IRAT), 3) Team Readiness Test (TRAT), 4) discussion, and 5) Application Exercises. Additionally, students responded to a post-course
Medication Practices Canada, Patricia Hung, Gary Lee, Calvin Poon, Safe Medication Practices Canada, Certina K.T. Ho, tinuous Quality Assurance in Community Pharmacy Practice. Along with learning value, TBL formatted class sessions may influence (strongly disagree-strongly agree) Likert scale. evaluation of team value, the use of strengths in teams, the value and perceptions of team value.

Extending Hospital-Based Medication Incident Reporting to Continuous Quality Assurance in Community Pharmacy Practice. Certina K.T. Ho, University of Toronto, Roger Cheng, Institute for Safe Medication Practices Canada, Calvin Poon, Institute for Safe Medication Practices Canada, Patricia Hung, Gary Lee, Institute for Safe Medication Practices Canada, Joe O’Leary, Institute for Safe Medication Practices Canada, Kristian Duwyn, Institute for Safe Medication Practices Canada, Medina Kadija, Institute for Safe Medication Practices Canada, Carol Lee, Institute for Safe Medication Practices Canada, Sanaz Riahi. Objectives: Medication system safety and risk management is a relatively new concept in community pharmacy practice when compared to other health care settings in Canada. This stems in part from the lack of a medication incident reporting and learning program designed for community pharmacies. Based on experience acquired from hospital-based incident reporting, the ISMP Canada Community Pharmacy Incident Reporting (CPhIR) program was designed specifically to provide opportunities to optimize learning from past mistakes in community/ambulatory pharmacies. Method: Core elements of CPhIR were determined through teleconferences conducted with pharmacists from Ontario and Nova Scotia. CPhIR allows individual pharmacies to perform incident analysis and monitor trends within their own setting and to view the national aggregate. ISMP Canada analyzes CPhIR medication incident data to determine national trends and disseminate shared learning through safety bulletins and newsletters. Results: Currently, there are over 300 registered CPhIR users in Canada. CPhIR contributes to the Canadian Medication Incident Reporting and Prevention System. Since CPhIR’s official launch in April 2010, over 24,000 medication incidents have been anonymously reported to ISMP Canada. Implications: Nationwide implementation of CPhIR may be a temporary barrier, as different provinces may have various priorities that need to be addressed regarding continuous quality assurance in community pharmacy practice. It is anticipated that CPhIR will be used by all community pharmacies for medication incident reporting and analysis across Canada, as creating a culture of patient safety with the support of a non-punititive reporting system needs to be encouraged within all areas of pharmacy practice.

Faculty Knowledge and Perceptions of Pharmacy Education at a Traditionally Liberal Arts College. Robert D. Beckett, Manchester College, Trent G. Towne, University of the Sciences in Philadelphia, Mary E. Kiersma, Manchester College. Objectives: Describe non-pharmacy faculty knowledge and perceptions of pharmacy education at a new school of pharmacy located within a traditionally liberal arts college. Method: Non-pharmacy faculty completed a 37-item survey distributed electronically with one additional reminder. Survey items addressed demographics, pharmacy practice, and pharmacy education. Respondents were required to answer 80% of the questions for inclusion. Descriptive statistics and Pearson correlation were used to assess the results. Results: Of 81 full time, non-pharmacy faculty members, 72 (89%) completed the survey. Thirty-six (50%) of respondents were male, 43 (60%) were age 41 to 64 years, and 66 (92%) were Caucasian. Sixty-eight (95%) had a Doctor of Philosophy or Master’s degree with even distribution by rank and division. Sixty-five respondents reported moderate (43%) or low (47%) knowledge of pharmacy education; sixty-six acknowledged favorable (63%) or neutral (29%) impression of pharmacy education. Thirty-nine (54%) identified a typical pharmacist education level. Perceived teaching and assessment strategies varied. Mean estimated pharmacy faculty time devoted to teaching, scholarship, practice, and service was reasonably accurate regarding pharmacy practice (39%, 18%, 35%, 13%, respectively) but inaccurate for pharmaceutical sciences (45%, 27%, 20%, 12%, respectively). Moderate perceived knowledge of pharmacy education positively correlated with use of pharmacists as a resource for medication-related questions (R2 = 0.338; p = 0.003) while low knowledge inversely correlated (R2 = -0.309; p = 0.007). Implications: Many responders expressed low knowledge of pharmacy education. The survey identified knowledge gaps to address. As our program evolves, education to our colleagues regarding the Doctor of Pharmacy program is essential in fostering collaboration and collegiality.

Focused Elective Tracks in a Professional Curriculum. Nancy Brahm, The University of Oklahoma, Susan E. Conway, The University of Oklahoma, Wendy Galbraith, The University of Oklahoma, Brooke L. Honey, The University of Oklahoma, Peter N. Johnson, The University of Oklahoma, Alan R. Spies, The University of Oklahoma, Jane E. Wilson, The University of Oklahoma, Mark L. Britton, The University of Oklahoma. Objectives: Focused elective tracks develop students’ pharmacy practice skills within special patient populations or develop general leadership skills, supporting college efforts to stimulate interest in continued education and professional development after graduation. Method: In 2010, the University of Oklahoma College of Pharmacy implemented focused elective tracks in its professional program in the areas of leadership development, psychiatric, pediatric, and nuclear pharmacy practice after review and approval of curricula, policies and procedures by the curriculum committee, college administration, and the university. Each track consists of 16 hours comprised of a minimum of eight hours of focused APPEs and six hours of elective didactic coursework approved for the specific track. Admitted students must be in good academic standing and are selected by a committee that conducts interviews after reviewing applicants’ curricula vitae and essays outlining career goals. Students accepted into a track are given preference for enrollment in required coursework. Successful students receive a designation on their transcript and/or diploma. Results: To date, 25 students have been admitted to a track, and two have graduated, both receiving acceptance into a PGY1 pharmacy residency and both with plans to advance within their practice area of interest. All current students are involved in scholarly work within their tracks. Implications: Focused elective tracks within a doctor of pharmacy program allow students to identify educational and practice opportunities earlier in their academic careers and begin professional development that better prepares them to compete for advanced education or practice opportunities upon graduation.
Fostering a Career in Academic Pharmacy Through a Doctor of Pharmacy Peer Educator/Mentor Certificate Program. Jane E. Krause, Purdue University, Juan D. Velasquez, Purdue University. Objectives: Develop and implement a Peer Educator/Mentor Certificate Program for Doctor of Pharmacy students which cultivates an interest in teaching and fosters an appreciation for an academic pharmacy career. The intent of this initiative is to develop a certificate model for Doctor of Pharmacy students similar to existing teaching certificate programs for graduate students and pharmacy residents. Method: Requirements for the Peer Educator/Mentor Certificate Program were designed in conjunction with the Center for Instructional Excellence at Purdue University. The created program included: (1) Classroom peer educator/mentor experience for one semester, (2) Development exercises including six hours of pre-seminar instructional components on basic teaching skills; participation in a pre-seminar micro-teaching session; and attendance at two additional hours of instructional teaching workshops; and (3) Student feedback and self-reflection on the experience and its impact on their growth. Results: Five Doctor of Pharmacy students (P2 and P3) participated in the pilot project of this initiative during the 2011 Fall semester. The students assisted in pharmacy practice laboratories taught to P1 students. Feedback received indicated the experience added to the students’ professional growth, knowledge, and awareness of a career in academic pharmacy. All appreciated the opportunity and were interested in exploring additional teaching opportunities. Feedback from the P1 students was positive regarding the instruction received from the P2 and P3 students. Implications: Due to the success of the pilot project, growth and continuation of the initiative is planned. The goal is to follow the students longitudinally to assess impact on and readiness for an academic pharmacy career.

Health Literacy Education: Demographic Factors Affecting Student Pharmacist Self-Assessment of Health Literacy Skills. Peter D. Hurd, St. Louis College of Pharmacy, Julie A. Murphy, St. Louis College of Pharmacy, Tricia M. Berry, St. Louis College of Pharmacy, Amy M. Tiemeier, St. Louis College of Pharmacy, Gloria Grice, St. Louis College of Pharmacy, Theresa R. Prosser, St. Louis College of Pharmacy, Nicole Gattas, St. Louis College of Pharmacy, Jill Sailors, St. Louis College of Pharmacy, Wendy C. Duncan, St. Louis College of Pharmacy. Objectives: Determine if demographic factors influence perceived health literacy (HL) skills of student pharmacists over two academic years. Method: During the P3 academic year, student pharmacists received didactic and experiential training on HL skills (e.g., Newest Vital Sign, Teachback, Ask Me 3™, plain language). Student pharmacists voluntarily completed identical questionnaires at the beginning of the Fall 2009 (n = 40), 2010 (n = 128) and the end of the Spring semesters 2010 (n = 155), 2011 (n = 157). The student pharmacists self-assessed overall HL skills (on a 7-point scale) and categorized use of health literacy skills (i.e., pre-contemplation, contemplation, preparation, action, maintenance) using the Transtheoretical Model. The questionnaire requested the student pharmacists’ gender, rural/urban hometown, and race. Results: Combined responses of both years of P3 student pharmacists indicated that they felt their overall HL skills improved (p<0.05). No gender-based differences were found (female 65%). Student pharmacists from rural hometowns (about 40%), assessed their overall health literacy skills as higher than those from urban areas at baseline (p<0.03) and at the end of the academic year (p<0.03). Student pharmacists indicating White as their race (about 80%), assessed their overall HL skills higher at baseline (p<0.01) and at the end of the academic year (p<0.01) when compared to Asian-American, African-American and Hispanic/Latino student pharmacists. Implications: A one-year health literacy program for P3 student pharmacists improved self-perception of HL skills. Student pharmacist self-reports of these skills differed when race or rural hometown were analyzed. Those teaching and assessing HL skills have reason to consider these demographics in their programs.

Health Literacy and Dietary Education by Pharmacy Students within Elderly Communities. Alison M. Walton, Butler University, Sarah A. Nisly, Butler University. Objectives: To assess health literacy and evaluate the impact of education sessions on dietary knowledge provided by pharmacy students within elderly communities. Method: Subjects were elderly members at one of three organizations in Indianapolis, Indiana: Elder Friendly Communities (EFC), Catholic Charities (CC), or Summer Trace (ST). All participants were assessed and educated on health literacy using the Newest Vital Sign as the screening tool. Additionally, pharmacy students developed and provided education sessions focused on dietary modifications for hypertension, dyslipidemia, and diabetes mellitus. Participants were asked to complete a six question pre- and post- survey assessing dietary knowledge. Results: Health literacy screening was completed by 76 total participants including 22 (28.9%) participants with a high likelihood for limited literacy. The average age for participants varied between the elderly community: 62 years of age at EFC, 72 years of age at CC, and 83 years of age at ST. Following the dietary educational session, a post-survey evaluating dietary knowledge was completed by 64 total participants. An improvement in knowledge was noted for all survey questions. Implications: Our findings demonstrate health literacy risk in elderly communities as well as the utility of pharmacy students providing dietary educational interventions.

Health Promotion Strategies to Increase Awareness of Asthma and Smoking Cessation Amongst Minority Adolescents. Keith Veltri, Touro College of Pharmacy-New York, Nataliya Shinkazh, Touro College of Pharmacy-New York, Mariana I. Babayeva, Touro College of Pharmacy-New York, Evangelina Berrios-Colon, Touro College of Pharmacy-New York, John Fisher, Touro College of Pharmacy-New York, Deborah Williams, Touro College of Pharmacy, Deborah A. Wittman, Touro College of Pharmacy-New York, Reeshemah Brightley, Touro College of Pharmacy-New York. Objectives: There has been a rising incidence of asthma in New York State with an inversely related association with annual household income and educational attainment. Residents who live within the New York City area have an even higher rate (9.4% vs. 7.6%, respectively). 1 Asthma prevalence and morbidity are especially elevated amongst teenagers, yet few interventions target this population. Research shows that teenage smoking increases the risk for asthma. 2 Moreover, cigarette smoking directly contradicts the basic principles of health literacy. Method: The organization of Touro College of Pharmacy in Harlem where 72% of the population is African-American and Hispanic reflects a commitment of the institution to provide educational opportunities to both its students and this underserved population. Through the college’s partnership with the Harlem Education Activities Fund, a six-week interactive seminar was developed to combat this health epidemic. Goals of the program included cultivating high school students on this respiratory disorder. This seminar builds on the obesity and diabetes sessions provided last year through the same affiliation. Results: These weekly two-hour seminar sessions were extremely successful. The students participated in entertaining, hands-on educational games and demonstrations. Both pre and post surveys were administered and students were asked to create intriguing poster presentations on lessons learned throughout the experience. The results of these assessments revealed an increased awareness of socioeconomic values. Implications: Partnerships with pharmacists and other community members have lead to increased awareness.
public health awareness and access expansion among previously underserved populations. Utilizing non-traditional settings can serve as a sustainable community health extender model for high-risk populations in disadvantaged urban communities.

Healthcare Passport: A Comprehensive Community Outreach Model for Medicare Beneficiaries. Sian Carr-Lopez, University of the Pacific, Joseph A. Woelfel, University of the Pacific, Michael Shioji, University of the Pacific, Marilyn Nicolas, University of the Pacific, Dina Hoang, University of the Pacific, Jennifer Rodriguez, University of the Pacific, Neha Rahan, University of the Pacific, Rajul A. Patel, University of the Pacific, Mark Walberg, University of the Pacific, Suzanne M. Galal, University of the Pacific. Objectives: To describe the impact of a comprehensive healthcare outreach model on introductory pharmacy practice experiences (IPPE) and student service. Method: A series of community outreach events targeting Medicare beneficiaries were conducted in the fall of 2011. Attendees were provided a color-coded business card (“Healthcare Passport”) with a unique three-digit code when they checked-in at an event. The passport identified each health screening station with a unique color that matched a banner displayed at each station. The stations included: blood pressure, cholesterol, diabetes, falls risk, memory decline, bone mineral density, asthma management, and immunizations. The passport also provided a space where students recorded individual’s screening results for the patient’s records. Students recorded the value of each screening performed and data between stations were collated based on the unique passport code. Results: Health care screening at the events resulted in students earning 2650 IPPE hours. Students provided 2633 health screenings for 1013 outreach attendees. Attendees were screened at an average of three stations, with cardiovascular risk stations being the most frequented followed by immunizations, diabetes and bone density. The various stations enabled a variety of experiences for students. Implications: The Healthcare Passport model enabled comprehensive health screenings in a community outreach setting, facilitated improved student-patient interactions, created a systematic approach for the delivery of a community outreach event, and proved effective in meeting introductory experiential requirements for students. For programs with large class sizes, incorporating comprehensive screening allows for greater numbers of outreach hours, as well as providing a well-rounded experience for students and attendees.

Immunization Station: An Active-Learning Laboratory. Krista L. Donohoe, Virginia Commonwealth University, Tonya M. Mawyer, Virginia Commonwealth University, J. Tyler Stevens, Virginia Commonwealth University, Laura A. Morgan, Virginia Commonwealth University, Spencer E. Harpe, Virginia Commonwealth University. Objectives: To implement an active-learning lab activity to teach pharmacy students about influenza, pneumococcal, and shingles vaccines, and to evaluate its effectiveness. Method: The laboratory session was divided into six immunization stations: three stations on influenza including pediatrics, and one each for pneumococcal, shingles, and anaphylaxis. Students determined the eligibility and appropriateness of the vaccine for two simulated patient profiles at each immunization station. At the anaphylaxis station, students learned signs and symptoms of an anaphylactic reaction to a vaccine, as well as how to appropriately manage these symptoms. Students completed a pretest, posttest, and a confidence survey to measure changes in their immunization knowledge and confidence. Students completed an evaluation of the activity after the lab. Results: Although 118/123 (95.9%) of students completed an immunization training certificate before attending the lab activity, the average score on the pretest was 56%. The posttest average improved to 87.4%. Students’ confidence improved by 18.6-57.6% in each of the five areas assessed. Based on evaluations (response rate: 51%), students found the lab activity well-organized, at an appropriate level, and relevant to pharmacy practice. They also felt it contributed to their professional development and 87.3% of respondents rated the activity overall as good or excellent. Implications: An active-learning approach to teaching immunizations allowed students to gain knowledge in simulated real-world experiences and reinforced key concepts on influenza, pneumococcal, and shingles vaccines.

Impact Of An Elective Course On Pharmacy Students’ Attitudes, Self-Efficacy, And Intentions To Pursue Postgraduate Training. Catherine A. Bourg, The University of Georgia, Beth Phillips, The University of Georgia, Sally A. Huston, The University of Georgia, William J. Guffey, Greenville Hospital System. Objectives: The purpose of this study was to determine the impact of a residency elective course on pharmacy students’ attitudes toward, self-efficacy and intentions to pursue postgraduate residency training, using Theory of Planned Behavior (TPB) as a framework. Method: All third year pharmacy students (2010-2011) were invited to complete a survey asking about attitude, subjective norms, perceived behavioral control, and intention to pursue pharmacy residency training as well as self-efficacy for specific tasks related to the pursuit of postgraduate training. Demographic information was also collected. The survey was administered at three different time points. Results: Of 123 students surveyed, 92 completed all three assessments. Among elective students (n=34), mean attitude (6.3 +/- 0.9 pre, 6.6 +/- 0.6 post, p < 0.05) and mean residency pursuit intention (6.0 +/- 1.1 pre and 6.5 +/- 1.2 post, p < 0.01) increased significantly over the academic year. Self-efficacy for completing 11 of 12 residency pursuit tasks increased significantly for elective students, while for non-elective students it increased significantly for only 5 of the 12 tasks. Regression analysis showed that the majority of demographic variables studied did not have a statistically significant effect on intention to pursue residency training. Implications: An elective course developed to introduce third year pharmacy students to postgraduate residency training significantly increased intention to pursue a residency position and confidence in abilities associated with the residency application process.

Impact of An Interprofessional Service-Learning IPPE Program on Pharmacy Students’ Attitude and Perceptions. Devra Khanh Dang, University of Connecticut, Gina Guinta, University of Connecticut, Philip M. Hritcko, University of Connecticut. Objectives: Starting with the 2006 fall semester, the University of Connecticut School of Pharmacy integrated a service-learning component into the P3 IPPE curriculum. These hours were to be completed in underserved communities such as migrant farm worker, soup kitchen and homeless shelter clinics. At each site, pharmacy students collaborate with other health profession students and clinicians to provide team-based care. During the 2010-2011 academic year (AY), this service-learning component increased from 24 to 100 hours. We examined differences between the AY 2006-2007 cohort and the AY 2010-2011 cohort in their perceptions of interprofessional teamwork, empathy toward patients, and intentions to work with underserved populations. Method: A comprehensive survey was developed that assessed the above characteristics. The survey was completed anonymously and voluntarily by pharmacy students at the beginning (prior to participating in the service-learning activities) and end of each AY. Results: At the beginning of the year, both groups were similar in self-reported empathy for patients and intentions for working in interprofessional teams. However, the AY 2010-2011 cohort reported higher willingness for working with underserved populations (p<0.001). At the end of the year, the AY 2010-2011 cohort reported significantly more empathy...
and willingness to work with the underserved and in interprofessional teams, relative to the AY 2006-2007 cohort (p<0.001 for all 3 measures). Implications: Increasing the service-learning requirement may have had a positive impact on students’ self-reported empathy and also willingness to work in interprofessional teams. The new service-learning requirements coincided with increased students’ willingness to work with underserved populations.

Impact of Electronic Device Use by Pharmacy Students on Academic Performance. William A. Prescott, University at Buffalo, The State University of New York, Heather L. Johnson, University at Buffalo, The State University of New York, Mark J. Wrobél, University at Buffalo, The State University of New York, Kelly Sustakoski, University at Buffalo, The State University of New York, Gina M. Prescott, University at Buffalo, The State University of New York. Objectives: To evaluate electronic device use (course-related/non-course-related) by pharmacy students during a pharmacotherapeutics sequence and assess its impact on academic performance. Method: A validated online survey assessing the type, nature, and extent of electronic device use during class was distributed to 238 second and third-year pharmacy students enrolled in two separate 4-credit hour pharmaco-therapeutics courses. Following completion of the course, a retrospective analysis of student grades was performed. Electronic device use and its impact on academic performance were assessed using Chi-square / Fisher’s Exact Tests and the Kruskal-Wallis test, respectively. Results: A total of 140/238 students were included (survey response rate 58.8%). Use of electronic devices during class was reported by 106/140 (75.7%) students. Among students using electronic devices, 97 (91.5%) and 86 (81.1%) reported using them for course-related and non-course-related reasons, respectively. The mean course grade among students using and not using electronic devices during class was 89.5% and 90.6% (p = 0.703), respectively. Although electronic device use did not impact academic performance among third-year students (p = 0.858), second-year students performed better academically if they did not use an electronic device during class (88.5% vs. 83.3%, p = 0.019). Implications: The use of electronic devices during class, for both course-related and non-course-related reasons, is common among pharmacy students. Although electronic device use is associated with a negligible impact on academic performance overall, their use by students early in the curriculum may negatively impact academics. These findings should be considered when schools develop policies pertaining to electronic device use by pharmacy students during class.

Impact of Role-Play on Self-Efficacy in Communication Skills. Melissa Heim, University of Wisconsin-Madison, Karen Kopack, University of Wisconsin-Madison, Henry N. Young, University of Wisconsin-Madison. Objectives: To evaluate the influence of role-play on first-year Doctor of Pharmacy students’ self-efficacy in communication skills after playing a simulated patient for second-year pharmacy student consultations in a Pharmacotherapy course. Method: A total of 136 first-year students enrolled at the University of Wisconsin-Madison School of Pharmacy were initially surveyed about their self-efficacy related to providing drug consultations. Students were then trained to play the patient role for second-year pharmacy student consultations in Pharmacotherapy Lab. After the role-play exercise, students were surveyed again to assess their confidence in communication skills. Each survey (pre- and post-) contained 11 items which examined various aspects of communication self-efficacy. Items used a 5-point Likert scale (1 = not at all confident and 5 = extremely confident) and were summated to create pre- and post-total scores. Descriptive statistics and paired samples t-tests were conducted to evaluate the impact of role-play on communication self-efficacy. Results: Seventy-six percent of students (n=103) completed pre- and post-role playing surveys. The average pre-role playing survey total self-efficacy score was 2.02 +/- 0.64. After role-playing as a simulated patient, average total self-efficacy scores significantly increased to 2.57 +/- 0.75 (t= 9.70, p < 0.001). Implications: Findings suggest that peer role-playing may increase first-year pharmacy students’ confidence in patient counseling skills. Future research should examine the long term effects of role models and patients’ perspectives on pharmacy students’ self-efficacy and performance of consultation skills.

Impact of Shortages in Fellowship Programs on Tenure Track Academic Positions. Terri M. Wensel, Samford University, Anne H. Metzger, University of Cincinnati. Objectives: This study was designed to elicit feedback from research-intensive universities regarding the impact of limited fellowship programs on the applicant pool for tenure-track faculty positions in colleges of pharmacy. Method: To achieve the stated objective, the 2010-2011 Pharmacy Practice Section Faculty Development Committee created a survey to gather information from chairs at research intensive colleges of pharmacy. The survey was created in SurveyMonkey and sent to 103 Chairs at colleges of pharmacy who were considered to be research intensive. These criteria included annual grant funding of $500,000 or higher and/or affiliation with an academic research health center. Results: 59 of 103 chairs at targeted institutions completed the survey for a response rate of 57.2%. Of the institutions who responded, 18 offered a fellowship program and 18 did not. The remaining institutions (3) did not offer a fellowship program but had current interest in developing one. The top reason cited for not offering a fellowship program was funding availability. Lack of trained mentors and collaborators were also cited as barriers to fellowship programs. At the time of the survey, 30% of the institutions had vacant tenure track faculty positions. Additional information regarding student awareness of fellowship programs was also elicited. Implications: Fellowship programs are limited in number and may impact institutions’ ability to hire qualified tenure track faculty. Development opportunities at the national level through AACP may be warranted to address the issues elicited from the survey.

Impact of a Capstone Course on Students’ Performance in the Advanced Pharmacy Practice Experience (APPE). Candace Tan, University of Hawaii at Hilo, Paula Zeszotarski, University of Hawaii at Hilo, Supakit Wongwiwatthanankanit, University of Hawaii at Hilo, Lara Gomez, University of Hawaii at Hilo. Objectives: ACPE Standards and Guidelines 2007 emphasize developing and integrating students’ practice competencies in pharmacy curricula. A practice-based capstone course can aid in achieving this. However, few studies have examined the impact of a capstone course on APPE performance. The purpose of this study was to evaluate the self-perceived impact of a capstone course on student preparedness and performance in APPEs. Method: An online survey measured students’ self-perception of their APPE performances and the effectivness of the capstone course in preparing them for APPEs. Preceptor evaluation of student performance for each corresponding skill in APPEs was also used to validate students’ self-perception. Descriptive statistics and Pearson’s correlation were used to analyze the data. Results: Results demonstrated a positive correlation between students’ self-perception of their APPE performance and the effectiveness of the capstone course across the majority of skills. However, students’ self-perception responses showed the capstone course prepared them the least for the Medicine clerkship, especially in the clinical and drug information skillsets. Poor performance in drug information skills was positively correlated with preceptors’ evaluation of student performance. Implications: The capstone course at the University of Hawaii at Hilo, College of Pharmacy was...
redesigned in 2011 to encompass a practice-based learning approach. Results for this inaugural class are being used to improve not only the capstone course, but also the overall curriculum to meet student competency needs. Implementing assessment of students’ self-perception of APPE performance in such courses will foster data-driven continuous development of curricular practice-based competencies across all Colleges of Pharmacy.

Impact of a Contemporary Issues Course on Student Attitudes about and Approaches to Lifelong Learning. Kelly M. Smith, University of Kentucky, Jeff J. Cain, University of Kentucky, Helen Garces, University of Kentucky. Objectives: To determine changes in pharmacy students’ attitudes toward and approaches to lifelong learning (LL) following a required contemporary issues course. Method: A 15-point anonymous electronic questionnaire was administered to third- and fourth-year students before and after a one-credit contemporary issues course, which included an introductory LL discussion. LL attitudes, personal relevance of professional issues, media and types of resources used for professional information, and the role of social media in conveying professional issues were solicited. Descriptive statistics, signed rank and McNemar’s tests were used. Results: Fifteen incomplete responses were excluded, yielding an 88% response rate (n = 111). On a 1 (none) to 5 (extensive) scale, the mean extent to which students remained abreast of professional issues beyond classroom instruction increased from 2.65 ± 0.75 to 3.36 ± 0.59 (p < 0.0001). The drug shortages discussion topic was deemed most relevant (4.54 ± 0.69) by all participants. Specific LL attitudes that changed the greatest were the ability to predict future needs (-34%) and not knowing how to systematically maintain a contemporary knowledge base (-30%). The most common sources of professional information changed from colleagues (69%) and print media (66%) to electronic newsletters (83%) and websites (81%). Use of social media and digital news aggregators for professional applications increased to 62% and 59%, respectively. Limiting social media to personal use only was an attitude that decreased from 48% to 19%. Implications: Equipping pharmacy students to assume responsibility for LL is challenging, and success is likely predicated upon structured learning activities that are introduced early and reinforced throughout the professional curriculum.

Impact of a Home Blood Glucose Monitoring Assignment on Student Perceptions and Confidence. Nathan A. Painter, University of California, San Diego, Candis M. Morello, University of California, San Diego. Objectives: Introduce students to glucose monitoring as part of a comprehensive 1st Year Diabetes Self-Care Education Program (DSEP). Evaluate student confidence and technique in training another person to perform glucose monitoring. Method: On the first day of Pharmacy Practice Course, 1st year student pharmacists were oriented to the Self-Monitoring Blood Glucose (SMBG) home project. Faculty demonstrated use of Monoject® lancet device and proper techniques of obtaining a good blood sample. Supplies were provided to student pharmacists for home use. A 14 question pre-survey, using a 5-point Likert scale, was also administered at this time. During diabetes workshop, students returned with completed SMBG assignment and monitors. Students demonstrated and educated another student on how to use the monitor and, perform SMBG, and results were documented. A 7 question post-survey, using a 5-point Likert scale, was administered following this workshop. Results: 55 of 58 (94.8%) students completed the pre-survey and 48 of 58 (82.7%) completed the post-survey. Students stated they strongly agreed or agreed that they believed they had the skills to describe the important criteria to evaluate when selecting a glucose monitor for patient on the pre-survey and 97.9% on the post-survey. 54.6% and 65.5% felt confident they could train another person to perform glucose monitoring, and felt confident in their ability to explain the details needed to maintain a complete glucose log on the pre-survey, respectively; compared to 100% on the post-survey. There was no difference in the percent of students who strongly agreed or agreed that the SMBG home assignment would help increase empathy for people with diabetes before or after the assignment (93% vs 94%). Implications: A home SMBG assignment, as part of a comprehensive 1st year DSEP, increases student pharmacists’ confidence in performing glucose monitoring and in training another person. With this model, early in their professional career student pharmacists can use acquired skills to educate diabetes patients on how to use their blood glucose monitors, thereby increasing the number of healthcare professionals who can help meet the needs of the growing diabetes population.

Impact of a Seminar on Pharmacy Students’ Interest and Engagement in Leadership: A One-Year Follow-up. Kelley L. Ratermann, University of Kentucky, Stephen R. Polley, University of Kentucky, Danielle Marie Antis, University of Kentucky, Natasha J. Conley, University of Kentucky, Kelly M. Smith, University of Kentucky. Objectives: To assess the short and long-term impact of a seminar on first-year pharmacy students’ views towards, interests and participation in professional organization leadership. Method: First-year students participated in a required four-hour leadership seminar, organized by the local Phi Lambda Sigma chapter, with topics including networking, leadership styles, and leadership through the healthcare team. Students were invited to complete an anonymous, electronic questionnaire prior to and following the seminar, and again one year later. Leadership interests, engagement, and viewpoints were evaluated through a series of attitudinal statements. Pairwise comparisons (e.g., McNemar’s test, Signed Rank test) were conducted. Results: Response rates exceeded 90% (n = 127-133) for each time course (pre, post, 1yr). Mean anticipated professional leadership during pharmacy school rose from 2.72 ± 0.67 to 2.75 ± 0.71 post-seminar (4-point scale; 1 = none, 4 = extensive). Actual leadership involvement in student pharmacy organizations one year later was 2.43 ± 0.85 (p = 0.0002 compared to pre-seminar; p < 0.0001 compared to post-seminar), with anticipated leadership involvement in the upcoming year of 2.88 ± 0.88. Guiding and directing others, and inspiring and influencing others were the most common leadership characteristics students associated with leadership throughout the study. The most common leadership style students possessed, encouraging followers to participate and give ideas, did not statistically differ throughout. Implications: A student-facilitated leadership seminar early in the professional degree program exposes students to the concepts of leadership and methods to hone their skills. Yet, leadership development must be integrated within a larger, systematic approach across the professional curriculum and coupled with sufficient opportunities for students to express leadership.

Impact of a Student Pharmacist Driven Medication History Service. Lynette R. Moser, Wayne State University, Justine S. Gortney, Wayne State University, Joshua Raub, Detroit Medical Center, Detroit Receiving Hospital, Kimberly Claeyss. Objectives: This study describes the changes to the medical record and interventions performed as a result of student pharmacist participation in obtaining and documenting medication histories. Method: This report describes student documentation of changes made to the Electronic Medical Record (EMR).
and interventions accepted as a result of medication histories completed as part of an Advanced Pharmacy Practice Experience. Adult patients (> 18 years of age) admitted within 72 hours and being followed by a pharmacy student were included. Exclusion criteria were the inability to speak English and admission directly from a nursing home. Medication histories were obtained by a student pharmacist through patient interviews and pharmacy contacts. Changes to the home medication list in EMR were evaluated. Interventions were performed following discussion with the preceptor based. Institutional Review Board approval was obtained. Results: A total of 216 medication histories were completed. The changes made to the home medication list were: 530 medications deleted, 626 medications added, and 692 instructions added or corrected, an average of 8.6 changes / patient. The average time the student pharmacist spent interviewing the patient and contacting the patient’s pharmacy to obtain a medication history was approximately 17 +/- 6 minutes. There were 76 interventions made to inpatient regimens. Implications: This structured activity provides opportunity to enhance the student’s role in providing direct patient care resulting in benefit to patients and institutions. Student roles can be structured based on the culture of care, pharmacy department and documentation standards of each institution.

Implementation and Evaluation of Stationary and Mobile Influenza Vaccine Services. Tamara F. Malm, University of Kentucky, Kelley L. Ratermann, University of Kentucky, Stacy A. Taylor, University of Kentucky, Tera McIntosh, University of Kentucky. Objectives: Develop, implement and evaluate the effectiveness of student pharmacist-staffed stationary and mobile influenza vaccine services as a means of increasing student vaccine administration experience. Method: Third year students partnered with University Health Service and Patient Care Lab faculty to develop an influenza vaccine service targeting the University of Kentucky. Following training, students screened, counseled, and administered influenza vaccine to faculty, staff, and students at 5 campus locations, including a mobile cart within the College of Pharmacy (COP). Students and faculty volunteers completed an anonymous electronic 20-item survey to evaluate the program’s organization, training, and experience value. Results: 35 students administered 524 vaccines under the supervision of 9 pharmacists. 313 (59.7%) and 211 (40.3%) vaccines were administered via stationary and mobile-cart services respectively. 69 (82.9%) and 8 (88.9%) faculty responded to the survey. 36 (100%) and 32 (91.4%) indicated the training session and clinics were well-organized administratively. 35 (97.1%) indicated the training session provided sufficient education on screening questionnaires and pre-filled safety syringes. 27 (93.1%) students strongly agreed and 2 (6.9%) agreed that their confidence in administering vaccines increased as a result of participating in the services. Implications: Development of a vaccine service allowed student pharmacists the opportunity to obtain more experience with immunizations. There are plans to continue this service in the future with additional research to focus on whether the mobile cart service impacted the immunization rate among faculty/staff within the COP.

Implementation of Health-System Medication Use Policy Project and Mock Pharmacy and Therapeutics Meeting. Stacy A. Taylor, University of Kentucky, T. Christopher Little, Elizabeth Schmidt, Kelly M. Smith, University of Kentucky, Mikael D. Jones, University of Kentucky. Objectives: Describe the implementation and assessment of a simulated medication policy project. Method: This project was a collaborative effort between the third professional year Pharmaceutical Policy and Public Health (PPPH) and Patient Care Lab (PCL) courses. Following six hours of health-system medication policy lectures in the PPPH course, four-person teams were assigned one of eight contemporary medication policy projects that required application of the following principles: 1) Evaluating evidence for formulary consideration, 2) Providing recommendations for appropriate use based on new evidence, 3) Evaluating a potential therapeutic interchange, or 4) Devising strategies to prevent medication errors. Each team presented data and recommendations at a mock Pharmacy and Therapeutics (P&T) Meeting held during the PCL course. Local health-system pharmacists evaluated teams based on presentation delivery, organization, content, and questions. Students were surveyed on the perceived impact of the activity and provided input for improvement. Results: 102 (80.9%) of 126 students responded to the electronic, anonymous survey. 58.8% of students reported no prior experience in drug policy development from work or experiential education. 100% of students indicated the project improved their understanding of the health system medication use policy process and should be continued. 92.1% felt the project enhanced their understanding more than lectures alone. Suggestions included clearer grading guidelines, increased clinician involvement, and extended project lead-time. Implications: A health-system medication policy project and mock P&T meeting provides a simulated opportunity for students to apply principles of developing medication use policy to address formulary considerations, appropriate use recommendations, therapeutic interchange, and medication error prevention.

Implementation of a Geriatric Empathy Activity in the Doctor of Pharmacy Curriculum. Melanie A. Dodd, The University of New Mexico, Rucha S. Bond, The University of New Mexico. Objectives: To describe incorporation of a geriatric empathy game into a 3rd year Doctor of Pharmacy pharmaceutical care lab (PCL) at The University of New Mexico College of Pharmacy (UNMCOP). To evaluate impact of this activity on student perceptions of geriatric patients. Method: The Geriatric Medication Game as developed by the St. Louis College of Pharmacy was incorporated into the fall 2011 PCL, a 3-hour weekly course at the UNMCOP. The game assigned each student to a given socioeconomic and functional status, including physical impairments such as vision, hearing, and mobility. Each student was then required to navigate the simulated healthcare system in the structured role playing game. The activity was followed by a debrief session facilitated by the instructors. Prior to and after participating in the geriatric game, the students completed a validated geriatric perceptions survey. The changes in students’ perceptions were retrospectively reviewed. Results: The activity was successfully implemented and well received by students. Student feedback indicates that this activity was successful at changing perceptions and enhancing empathy of geriatric patients. Students specifically commented that this was a fun method to provide some perspective on the limitations and challenges that are faced by some geriatric patients. Implications: Incorporation of this activity will potentially enhance the student pharmacists’ ability to provide empathetic comprehensive care to the complex geriatric patient. This activity will continue to be incorporated into future offerings of this course.

Implementation of a Modified Team-Based Learning Medication Therapy Management Certificate Program. Charlotte Ricchetti, Regis University, Leticia Buffet, Regis University, Megan Leeds, Regis University, James Nash, Regis University, Robert C. Haight, Regis University. Objectives: To assess knowledge, confidence and experience gained by students who participated in a modified team-based learning (TBL) version of the American Pharmacists Association (APhA), Delivering Medication Therapy Management (MTM) Services in the Community certificate program. Method: Students’ knowledge was assessed pre and post participation in the self-study activities and

live interactive TBL portions of the certification program. A twenty-six question survey, varying in format, was distributed to students which focused on general knowledge, confidence and experience. Descriptive and inferential statistical tests were performed on these data. A Wilcoxon signed-ranks test was conducted between pre- and post-test data to determine changes in student knowledge, confidence, and experience perception. Results: Fifty P3 students participated in the live interactive portion of the certificate program using a modified TBL model; 49 completed the pre-survey, and 29 completed the post survey. The average score on the knowledge assessment increased from 41% to 72%. There was a significant increase in the students' confidence in their ability to perform all components of an MTM encounter. Students indicated a significant increase in their experience utilizing skills necessary to perform MTM after participation in the course. Implications: Delivering the APPhA MTM certificate program using a modified TBL model increased students' knowledge and confidence to provide MTM services. When students complete the experiential component in the P4 year, this program has the potential to increase the prevalence of MTM services in the community. Areas of future research include evaluation of interventions, preceptor perceptions, and a comparison of TBL to standard instruction.

Implementation of a Blended-learning Strategy in a Drug Information and Literature Evaluation Course. Jodie F. Greene, The University of Tennessee, Jana Sterling, The University of Tennessee, Alexander B. Guirguis, The University of Tennessee, Katie J. Suda, The University of Tennessee. Objectives: A blended-learning strategy was implemented in a third-year course composed of pre-recorded online lectures to provide increased use of classroom time for recitations with active learning. The objective of this project was to evaluate the impact of the course format change on the number of recitations, student experience, course grades and evaluations. Method: The blended-learning course was delivered synchronously to the Knoxville (38.8%) and Memphis (61.2%) campuses. Students were required to view lectures online through the course management system. Lectures expired weekly but were made available prior to exams. Students were expected to prepare for recitation sessions having viewed the lectures and read required materials. Recitations were structured with team-based learning activities and quizzes to reinforce student preparedness, participation and learning of course concepts. Grades and evaluations were compared for the 2010 traditional course and the 2011 blended-learning course. Chi-squared was used for statistical analysis; P<0.05 was considered significant. Results: Implementing blended-learning increased recitation sessions by 300%. Recitations using team-based learning increased by 250% with the new course; 96% of students reported the recitations as 'helpful'. Overall lecture hours decreased by 8.6% and live lectures by 85.7%. There was no difference in course grades or evaluations between the two years (p>0.05). Students reported the recitations as 'helpful'. Overall lecture hours decreased by 250% with the new course; 96% of students reported the recitations as 'helpful'. An unpaired Student's t-test was used to assess differences between baseline and 1-year continuous variables, while the chi-square test was used to assess the change in optimization. Results: Patients in the CPS program had a significantly higher baseline A1C (7.5±2.0%) than standard care patients (7.1±1.4%; p<0.001). CPS patients also had significantly higher low-density lipoprotein (LDL) and triglyceride (TG) values. After one year of follow-up, CPS patients had significantly greater decreases in A1C (-0.5±1.6% vs. -0.22±1.1%; p<0.001), LDL (-8.5±34.5 mg/dL vs -3.0±28.5 mg/dL; p=0.025), and TG (-25.0±124 mg/dL vs -2.0±110 mg/dL; p=0.011) than standard care patients. Implications: This study shows that a CPS program embedded in a PCMH can decrease A1C and other important biomarkers in diabetes patients to a greater extent than standard care. Physicians may refer more “difficult to control” patients to CPS programs. New CPS programs would help reach out to uncontrolled diabetes patients.

Innovative Course for First-year Pharmacy Students to Improve Confidence in Counseling on Commonly Prescribed Medications. Kimberly Van Wyk, Western New England University, Kevin Cleveland, Idaho State University, Kathy Eroschenko, Idaho State University.
Objectives: To determine if an innovative course could facilitate first-year pharmacy students in gaining confidence in patient counseling on the most commonly prescribed medications. Method: Students enrolled in a 2-credit elective focusing on patient medication counseling and communication. Course was designed to utilize pre-class worksheet assignments, facilitator moderated lectures/discussions and performing mock counseling scenarios. Weekly quizzes and monthly exams were utilized to objectively measure information retention. Students completed a survey on the first and last day of class assessing how often they counseled while in the community setting and overall confidence in their counseling skills. Results were evaluated and utilized to enhance future course delivery. Results: Regardless of work experience, students reported that they would counsel more often after the completion of the course; however this did not reach statistical significance. Regardless of work experience student’s perceived confidence in patient counseling improved (p<0.001). The students that did not report working in the community setting confidence improved statistically significantly more than those who did work in a community setting (p=0.04). Implications: This study revealed that first-year students, with no previous pharmacy therapeutic curriculum, built a strong foundation of counseling abilities in the classroom that was reflected in an increase in confidence in patient counseling. All students and preceptors will be surveyed following completion of community APPE rotations to determine if counseling opportunities and abilities were taken advantage of by students who completed the course compared to their peers who did not.

Integrating Independent Institutions: Results of a Course to meet IPEC Competencies in Values/Ethics and Roles/Responsibilities. Sarah L. Scarpace, Albany College of Pharmacy and Health Sciences, Glenda Kelman, Sage Colleges of Nursing, Joan Dacher, Sage Colleges of Nursing, Evelyn Tenebaum, Albany Law School, David Pratt, Albany Medical College, Bruce D. White, Albany Medical College. Objectives: To describe the process of 4 independent institutions to offer a pilot didactic course to meet the Values/Ethics and Roles/Responsibilities domains of the IPEC Competencies; to describe the impact of this course on student views on other professions’ roles/responsibilities Method: Faculty from independent schools of pharmacy, medicine, nursing, and law co-developed and offered a hybrid online/live interprofessional seminar focused on a public health issue (pandemic flu). The core activities of the course were the same for each school but each institution had flexibility to add enriching activities and variable course credit hours to meet the specific needs of each program. A pre- and post-assessment was administered in a blinded fashion to all participants which asked questions related to their experience working/training with the other professions; the value and limitations of the other professions; and views on how much interprofessional collaboration is emphasized in their programs and their interest in working in interprofessional teams Results: A total of 7 faculty and 23 students representing each of the 4 professions participated in the course. Post-assessment survey responses demonstrate improvements in the understanding of the roles/responsibilities of each of the professions. Implications: The success of this pilot project and future directions demonstrates that independent institutions can implement IPE and improve understanding of the roles/responsibilities among different health professions. Key challenges include scheduling, scalability, and integration into the curriculum of the programs.

Integrating Now: Evaluation of Student Perceptions of Integrating Pharmacology and Pharmacotherapy Course Material through Short Instructor-driven Discussions. Emily K. Flores, East Tennessee State University, Brooks B. Pond, East Tennessee State University. Objectives: To evaluate student perspectives on integrating pharmacology and pharmacotherapy course material through short instructor-driven cross discipline discussions, to determine if podcasting would be a viable alternative to live instructor presentations, and to determine if this method of integration should be expanded within these courses. Method: Integration is a significant discussion in Colleges of Pharmacy across the nation. In order to begin to integrate pharmacology and pharmacotherapy in our curriculum, course instructors volunteered to participate in a pilot effort whereby pharmacotherapy instructors visited pharmacology classes after the pharmacology of certain drugs was presented. Pharmacotherapy instructors discussed with the pharmacology students clinical connections for the material, highlighting what would be especially important to remember for pharmacotherapy and clinical practice. At the end of the semester, students were surveyed electronically about their perceptions of this integration and whether or not it aided in their understanding of the material that was integrated. Results: Student response rates to the electronic survey were 46% and 64% for the P1 and P2 class, respectively. Overall, the students responded were positive for this method of integration. A surprising finding in this study was that students did not agree that podcasting would be a viable alternative to live instructor presentations. Implications: Due to the overall positive findings from the pilot project of this method of integration in our curriculum, expansion into other topics or courses is being considered.

Integration of Pharmacy Students into a Free Medical Program Within a Community Outreach Elective Rotation. Fae Gwen Wooding, Massachusetts College of Pharmacy and Health Sciences-Worcester, Kristin Tuiskula, Massachusetts College of Pharmacy and Health Sciences-Worcester, Tenley Poulin, Massachusetts College of Pharmacy and Health Sciences-Worcester, John Cadwalader, Massachusetts College of Pharmacy and Health Sciences-Worcester, Robin Cullen, Massachusetts College of Pharmacy and Health Sciences-Worcester. Objectives: To determine if students can be successfully integrated into a free medical program and the degree to which students deliver pharmacy services. Method: After completion of a formal orientation and training program, pharmacy practice faculty and Advanced Pharmacy Practice Experience (APPE) students counseled patients receiving prescriptions at a free medical clinic from June to November 2011. Each patient was educated on medication indications, proper administration, common side effects, avoidance of potential drug interactions and low-cost options for filling. Interpreters were utilized and drug monographs were distributed in the patient’s language as needed. Students and faculty served as a drug information resource for volunteer clinicians and verified written prescriptions for accuracy. The total number of patients counseled, average number of prescriptions per clinic session, frequency of interpreter use, as well as the number and types of pharmacy interventions provided to volunteer clinicians were determined. Results: Two pharmacy practice faculty and 11 APPE students counseled 86 patients over 12 clinic sessions. Interpreters were used for 74 patients, with Spanish (63.5%) and Portuguese (15.3%) being the most frequently encountered languages. Faculty and students counseled on an average of 9 medications per clinic session. A total of 64 pharmacy interventions were performed for incomplete prescriptions (53.3%), drug interactions (13.3%), medication prices (13.3%), and therapy recommendations (20%). Implications: Students were successfully integrated into a free medical program during a community outreach rotation. This integration promoted safe prescribing and medication use in patients with limited access to health care. Partnerships between clinics and colleges of pharmacy may provide sustainability of pharmacy services.
Integration of Basic Science and Pharmacotherapy Content in the Development of a Pharmacy Lab Course Sequence. Laura A. Morgan, Virginia Commonwealth University. Objectives: To integrate pharmacotherapy, medicinal chemistry, and pharmaceutics content into a 6-course pharmacy lab sequence. Method: Implementation of a new curriculum at VCU School of Pharmacy in Fall 2008 resulted in the expansion of Foundations of Pharmacy Practice (Foundations) labs from 4 semesters to 6 semesters. Curriculum reorganization forced revision of existing courses along with development of new courses. This provided an opportunity for greater application of both basic science and pharmacotherapy content. Pharmacotherapy, medicinal chemistry, and pharmaceutics faculty members worked with Foundations coordinators to identify opportunities to develop applied activities for their respective content. The focus of application exercises is material from concurrent courses each semester. Results: Prior to curriculum implementation, 48.3% of 60 weeks of Foundations courses involved integration of concurrent content. After the implementation, 78% of 86 weeks of courses involve direct application of content in concurrent courses. The most significant area of application is with pharmacotherapy content (50%) while medicinal chemistry has the least amount of integration (16%). Integration of content ranges from 60% in the first-year fall course to 100% in the third-year spring course. Examples of activities include counseling, compounding, SOAP notes, journal article evaluation, and game-based activities. Feedback from students on the integration has been overwhelmingly positive. Faculty also report positive collaborative experiences. Implications: Cooperation of faculty across disciplines may result in improved integration and application of content in diverse areas of the pharmacy curriculum.

Interdisciplinary Approach by Film and Pharmacy Students to Educate Students University-wide on Public Health. Kelly L. Matson, The University of Rhode Island. Objectives: The objective of this activity is to enhance pharmacy students’ knowledge and communication of public health topics through education of university peers. Student perspectives of an interdisciplinary approach of peer education delivered by campus-based conventional and web television productions were assessed. Method: Students enrolled in a pediatric elective course were randomly assigned to prepare and present educational programs based upon public health topics for young adults, newly defined by Healthy People 2020. Each program was scripted in a talk-show format, and then filmed and edited by concurrent students enrolled in a film production course. Educational segments aired University-wide on conventional and web television. Project outcomes were assessed by 10 baseline and follow-up questions using a five-point Likert scale in communication skills development, knowledge of public health as well as students’ perceptions of educating peers through an interdisciplinary approach. Results: Twenty-seven pharmacy students at baseline and 21 pharmacy students at semester’s end were surveyed. A 25.4% percent change was observed in students’ perception of enhanced importance of pharmacists’ role in public health. Improved understanding of public health and communication skills was also observed with percent changes of 16% and 23.8%, respectively. Students’ level of comfort using film technologies was improved by a 14.6% percent change. Implications: An interdisciplinary approach provides pharmacy students a way to learn public health knowledge more readily, and to appreciate student differences and adopt a range of methods to promote better understanding for themselves and their peers. Additionally, pharmacy students will gain skills in community outreach and film production technologies.

Interprofessional Education Accreditation Standards for US Health Professions: A Comparative Analysis. Joseph A. Zorek, Texas Tech University Health Sciences Center, Cynthia L. Raehl, Texas Tech University Health Sciences Center. Objectives: To identify and compare interprofessional education (IPE) expectations within current accreditation standards for US health professions. Method: Using 18 key search words, IPE statements within accreditation documents for all practice-level degrees in dentistry, medicine, nursing, occupational therapy, pharmacy, physical therapy, physician assistant, psychology, public health, and social work were identified. Statements were then independently categorized by each author into one of three mutually exclusive categories: accountable (the respective accrediting body could reasonably enforce the statement), non-accountable, or non-applicable (did not meet the World Health Organization IPE definition). Interrater reliability was calculated; a third individual determined the final categorization for all discrepant statements. Results: Twenty one separate documents detailed accreditation standards for the 10 health professions. Substantial agreement for statement categorization was observed (181/205, Kappa 0.79; 95% CI 0.69 - 0.89). Although 81% (17/21) of documents contained IPE-relevant language, only one-third (60/178) of accreditation statements were deemed accountable. Two-thirds (14/21) of documents contained 2 or fewer accountable statements. Over three-fourths of all accountable statements appeared in documents published by two accrediting bodies. Implications: Accrediting bodies for the US health professions do not share concrete or common expectations for interprofessional education. Lack of a collective curricular IPE mandate signals a potential lack of preparedness among graduates for interprofessional collaborative practice. Accreditation documents for nursing (Commission on Collegiate Nursing Education) and pharmacy (Accreditation Council for Pharmacy Education) most robustly incorporated IPE expectations and may provide model language for other accrediting bodies.

Interprofessional Education Learning Activity During Student Orientation for Health Professions at University of New England. M. Lisa Pagnucco, University of New England, Shelley Cohen Konrad, University of New England, Clay Graybeal, University of New England, Kris Hall, University of New England, Peg Donovan, University of New England. Objectives: To introduce health profession students early in their education to providing patient-centered health care that is collaborative, comprehensive, caring, safe, and continuous. Method: As part of orientation to the health professions, 417 new students received an introduction to interprofessional education (IPE). Students from nine health programs, including 99 from pharmacy, attended orientation. At registration, students from all health professions were assigned to an interprofessional team. Students were shown a video describing each profession’s role on the health care team. Multiple student teams were assigned to discussion groups and shown a video of a patient case vignette. Faculty facilitators provided the teams questions to guide group discussion and encourage participation from each member representing the different health professions. Question items contained themes that embraced a holistic and interprofessional approach. Team members were asked to contribute from within, as well as outside, their own health profession. Electronic post-event surveys were distributed to each orientation attendee. Results: One-third of students in attendance responded to the electronic survey after the IPE orientation activity. The survey included rated and open-ended questions as well as Likert-type questions. Respondents expressed an understanding of IPE as it relates to their health profession, other roles for health professionals in patient care, the importance of interprofessional teamwork and an expanded understanding of patient issues.
Implications: Early exposure to IPE patient-centered activities provides a framework for health professional students to practice exceptional patient care by incorporating shared expertise from multiple health professions.

Interprofessional Attitudes and Perspectives Among Health Care Professional Students at a Public, Liberal Arts University. Elizabeth W. Blake, South Carolina College of Pharmacy, April D. Miller, South Carolina College of Pharmacy - USC Campus, Mackenzie Mullenix, South Carolina College of Pharmacy - USC Campus. Objectives: To measure the perceptions of health care professional students on interprofessionalism and to quantify the amount of interaction between the various health care professional students at a large liberal arts university. Method: Surveys were distributed electronically via SurveyMonkey to students enrolled in health professional (pharmacy, nursing, medicine) programs on the University of South Carolina campus. An IRB approved electronic survey instrument with validated survey items from the Readiness for Interprofessional Learning scale was used. Additional questions requested students to quantify time spent with other health professional students in various settings. Results: There were 412 responses from the 1390 students who received the survey (30% response rate). Response rates were varied between disciplines (Pharmacy 44%, Nursing 19%, Medicine 30%) with higher response rates from pharmacy and medicine (p<0.05). However, respondents from each program had similar responses to survey items. Approximately 85% of respondents answered favorably on questions assessing a readiness for interprofessional learning. However, 80% reported interacting with students from other health professions either never or less than 3 hours per week. A similar percentage of respondents also indicated an interest in campus-based interprofessional meetings, while only 40% were interested in an elective course. Implications: Health care professions students training in a liberal arts university environment reported a low frequency of interactions with other health professions students. They indicated a strong readiness to engage in interprofessional activities, especially in the extracurricular environment. Collaborative efforts across all health science programs are underway to increase interactions between health professional students.

Interprofessional Collaboration Advancing Patient Safety Program: Needs Assessment for Community-based Organization Serving Developmentally Disabled Adults. Veronica S. Young, The University of Texas at Austin, Eva N. Chugh, The University of Texas at Austin, Amanda L. Fowler, The University of Texas at Austin, Katherine L. Lee, The University of Texas at Austin, Sumon K. Sen, The University of Texas at Austin. Objectives: Community-dwelling adults with developmental disabilities (DD) often require assistance from caregivers with no healthcare training. A community-based organization (CBO) providing care to DD adults identified a need to improve their training program emphasizing patient safety. This requires establishing a baseline assessment of their existing process. The objective of this community service learning project is to assess the perception of administrators and staff on: (1) training effectiveness; (2) medication delivery process efficiency; (3) staff competency; (4) concept of patient safety. Method: The needs assessment was conducted using (1) separate paper surveys for administrators and staff and (2) a focus group format stratified by practice sites and work shifts. Survey instruments and focus group guides were developed based on CBO concerns and on-site observations. Quantitative data were analyzed using Excel. Qualitative data were analyzed and categorized into themes. All data are stored on a secure server. Results: Survey response rate is 58% for staff and 88% for administrators. Descriptive analysis of quantitative data revealed differences regarding perceived staff knowledge and competency level, effectiveness of training materials, and efficiency of the medication delivery process. Themes emerging from qualitative analysis include inadequate communication, inconsistencies in medication delivery process, variation in understanding of patient safety, and desire for interactive training. Findings were presented to the CBO. Implications: Community caregivers play a significant role in the healthcare continuum. Findings highlight opportunities to enhance the medication delivery process emphasizing patient safety and sources of medication errors. Next phase of the program will focus on developing targeted training modules.

Investigating Student Attitudes About Collaborating Across Campuses Using an Online Book Club. Jeanne M. Conway, University of Minnesota, Karen M.S. Bastianelli, University of Minnesota, Jennifer S. Chen, University of Minnesota, Angela K. George, University of Minnesota, Christene M. Jolowsky, University of Minnesota, Nichole M. Kulinski, University of Minnesota, Meg Little, University of Minnesota, Sarah K. Schweiss, University of Minnesota. Objectives: To assess student attitudes about interacting with each other across three cohorts and two campuses while participating in an online book club. Method: The book club was an elective project facilitated via an online Moodle discussion to enhance cultural sensitivity in a skills lab sequence. Students participated in an introductory activity to get oriented in an online environment, were divided into discussion groups of six, contributed to two online discussions sharing reflections about aging and implications for pharmacy practice, and posted and peer-critiqued reflections. The activity’s impact on student attitudes toward collaborating with students across cohorts or campuses was assessed using pre- and post-surveys. Results: 236 students from first-, second-, and third-year classes on both campuses participated. 230 and 198 students completed the pre-survey and post-survey, respectively. 43%, 28%, and 29% of participants were first, second, and third year students, respectively. Participants were divided evenly between the two campuses. Statistical differences in the pre- versus post-survey responses were found for items regarding working with students across campuses. More students enjoyed working with students from both campuses (p<0.001) and fewer students felt more comfortable working only with students from their campus (p>0.001). For items assessing attitudes toward different cohorts, students enjoyed working together and were less likely to agree that they were more comfortable with peers from their cohort (p=0.008). Implications: An online book club is effective at improving student interaction across distance campuses. Future offerings of the book club will continue to evolve to better engage students across the campuses.

Investigating the Effectiveness of Drama as an Engagement Learning Methodology in an Integrated Therapeutics Course. Tejal V. Patel, University of Waterloo, Elaine Lillie, University of Waterloo, Jennifer Roberts-Smith, Department of Drama and Speech Communication, University of Waterloo, Nancy Waite, University of Waterloo. Objectives: This study was designed to investigate whether using student-created dramas was effective in developing student learning, engagement and confidence in a pharmacotherapeutics course. Method: This quasi-experimental study was conducted over two years, Spring 2010 (S2010) and 2011 (S2011). Course material was delivered through faculty lectures in both years. During S2010, 5-6 member student teams delivered case-based power-point presentations; in S2011 teams presented case-based problems through 10-minute dramas. Exam and case presentation marks were compared. Additionally, students were surveyed about the impact of case presentation style.
on their confidence, and engagement (captivation of interest (CI), and enthusiasm for learning (EL)). 

**Results:** Mean marks for exams and case presentations improved significantly from S2010 to S2011 (midterm 1: 75.9% (S2010) vs. 80.1% (S2011), midterm 2: 67.9% (S2010) vs. 75.9% (S2011), final: 67.4% (S2010) vs. 72.9% (S2011)); mean case presentation marks (86.8% (S2010) to 89.5% (S2011)). Survey results indicate that when students presented cases as dramas, confidence decreased (mean score 4.39 (S2010) to 3.89 (S2011); p < 0.05); all other measures (mean scores) indicated no significant differences (confidence in watching case presentations: 3.35 (S2010) vs. 3.20 (S2011); engagement in either watching (CI: 3.42 (S2010) vs. 3.67 (S2011); EL: 4.06 (S2010) vs. 3.72 (S2011) or presenting (CI: 4.10 (S2010) vs. 3.92 (S2011); EL: 3.35 (S2010) vs. 3.39 (S2011)) cases. 

**Implications:** Although performance on objective measures improved, student confidence when presenting dramas declined. This decrease in confidence may result from the students’ lack of experience with creating dramas and warrants further examination.

**Junior Faculty Development: A Focus on the Structure of Mentorship Programs for Pharmacy Faculty.** Melissa M. Chesson, Mercer University; Annessha W. Lovett, Mercer University; C. Lea Bonner, Mercer University. 

**Objectives:** Effective mentoring in the academic setting has been shown to influence faculty productivity and retention, personal growth, and career satisfaction. Few studies have evaluated the existence of pharmacy faculty mentoring programs. The objective of this study was to describe the structure of mentoring programs at schools and colleges of pharmacy throughout the United States. 

**Method:** A Qualtrics™ internet survey was distributed via email to deans of 124 schools and colleges of pharmacy. The 16-item questionnaire was adapted from Wutoh and colleagues (permission granted) and included one open-ended question. Descriptive statistics were utilized to evaluate the results. 

**Results:** Forty-five deans (36.3%) completed the survey indicating the existence of formal (64%) and informal (81%) faculty mentoring programs with the majority developed over the past decade (76%). Although the majority of deans indicated that senior faculty involvement in the program is voluntary (90%), more than half of the programs (65%) provide credit for mentoring junior faculty. For junior faculty, mandatory (51%) and voluntary (49%) participation in mentoring programs is approximately equal. Furthermore, half of the survey participants (53%) denoted the lack of an easily measurable evaluation of success for mentoring programs. 

**Implications:** Previous studies report a lack of existence of formal faculty mentoring programs at schools and colleges of pharmacy. Findings of this study suggest an increase in the number of mentoring programs with an emphasis on mandating junior faculty participation. Despite the increase in faculty mentoring programs, there still remains the need for a measurable assessment tool to evaluate the success of these programs.

**Keeping Leadership Students Learning Outside the Classroom: Designing an Elective Utilizing Blended Pedagogy and Twitter.** Lauren S. Schlesselman, University of Connecticut. 

**Objectives:** To develop leadership course focused on servant leadership (SL) and advocacy/outreach development. 

**Method:** Course designed to cover 3 modules, identified by student leaders as needs: basic skills, SL, and developing advocacy/outreach activities. Out-of-class activities included online lectures, discussions, readings, homework, tweeting, and developing outreach proposal based on ADDIE model. In-class activities involved team building and active learning activities. After reading “The Fred Factor” and “29 gifts,” students were required to post tweets 5 days/week stating how they had been servant leader that day. 

**Results:** Students appreciated active learning approach; course evaluation showed mean 9.7 (1-10) on achieving objectives and 10 for stimulating interest. Students requested expansion of interviewing skills and “egg drop from sixth floor” team building activity. None of the students used Twitter before course but viewed as positive aspect of course, effective application of SL by thinking about what they do each day for others. All but one student noted that when students presented cases as dramas, confidence decreased. For junior faculty, mandatory (51%) and voluntary (49%) participation in mentoring programs is approximately equal. 

**Implications:** Active learning activities provided effective application of leadership skills, while Twitter allowed students to also model skills for other students/friends.

**Leader-Development in a Pharm.D. Curriculum: A Novel Elective Course.** Brandon J. Sucher, Regis University; Michael H. Nelson, Regis University; Daniel L. Brown, Palm Beach Atlantic University. 

**Objectives:** To design, implement, and evaluate a 3-credit hour Applied Leadership in Pharmacy Practice elective course. 

**Method:** This course was designed to provide insights that will help today’s students become tomorrow’s leaders – as pharmacists and in life. Instead of analyzing the external act of leadership, students discovered, reflected on, and enhanced leadership skills required by pharmacists. Facilitated discussions and journal entries emphasized emotional intelligence, timeless leadership and influence principles, interpersonal communication, embracing adversity, conflict management, leading change, positive reinforcement, and strategic planning. Assignments included Conflict Management Scale, Emotional/Social Competency Inventory and Development Plan, Kolb Learning Style Inventory, Strength Deployment Inventory, StrengthFinders, personal mission statement, and student-led team-building activities, leadership quality discussions, and pharmacy performance matrix presentations. A survey was administered to assess students’ perceived value of topics and assignments. Additionally, a 4-point Likert 14-item instrument assessed achievement of learning outcomes. 

**Results:** Survey response rates were high (8/8 100%). The most valued topics were Applying Results of Strength Deployment Inventory to Communication and Conflict Management, Applying Knowledge of Learning Styles to Communication and Working with Others, and Embracing Adversity. The most valued assignments were the Strength Deployment Inventory, StrengthFinders, and the Team-Building Activity. All students strongly agreed or agreed the course achieved all learning outcomes except preventing conflict from escalating (25% disagreed). 

**Implications:** Students perceived this course as effective in achieving learning outcomes. Results from survey data were used to improve course content and design. This course continues to be offered and reached its enrollment cap of 15 students this year.

**Longitudinal Assessment of Impromptu Consultations of Select Top 200 Medications.** Heidi Eukel, North Dakota State University; Jeanne E. Frenzel, North Dakota State University; Elizabeth Skoy, North Dakota State University. 

**Objectives:** To assess students’ ability to provide impromptu consultations on select top 200 medications. 

**Method:** Third year professional pharmacy students enrolled in a pharmaceutical care laboratory were assigned a list of twenty medications from various medication classes which aligned with therapeutics coursework. Students were randomly chosen throughout the semester to provide an impromptu consultation on one of the medications without the use of drug information resources or preparation time.
following semester, fourteen additional medications were added to the list. Student performance was evaluated on the ability to explain how the medication works, special clinical considerations, OBRA ’90 requirements, and communication skills. **Results:** Eighty-eight students were evaluated 3 times during the fall semester and 3 times during the spring semester using a faculty developed rubric. During the fall semester, the ability to counsel showed statistically significant improvement from the initial to the final assessment for the rubric criteria: common adverse effects including instructions on how to avoid or manage \( p = 0.0037 \) and medication dose timing \( p = 0.0353 \). During the spring semester, ability to counsel showed statistically significant improvement from the initial to the final assessment for the rubric criteria: duration of therapy \( p = 0.0353 \), common adverse effects including instructions on how to avoid or manage \( p = 0.0223 \), and special clinical considerations \( p = 0.0509 \). **Implications:** Impromptu consultation assessments are an effective means of assessing student preparedness to counsel on select top 200 medications. Student consultation skills improved longitudinally as a result of impromptu consultations.

**Longitudinal High Stakes Fourth Year Summative Clinical Assessment.** Eric F. Schneider, University of Waterloo, Nancy Waite, University of Waterloo, Danette Beechiner, University of Waterloo, Janie A Bowles-Jordan, University of Waterloo. **Objectives:** A longitudinal high stakes assessment process was implemented to evaluate fourth year clinical competence among baccalaureate pharmacy students in Ontario, Canada. This poster describes the process and outcomes from the first year’s data. **Method:** A two part summative assessment was developed to assess competencies expected upon completion of a first professional degree program in Canada. Part one is a simulation exercise using a 5-station OSCE. Part two is a longitudinal 6-day patient care assessment conducted over six weeks in a true clinical setting. Patient workup, documentation, and follow-up components adhere to a standardized format irrespective of the clinical setting—each student is assessed with a detailed rubric for patient interaction, assessment and written skills. The small group of paid pharmacist assessors undergo training to ensure standardized student expectations and evaluation. Students must pass both components prior to graduation. Students unsuccessful in either component receive an individualized education plan for remediation and up to two repeat attempts. **Results:** Eighty-eight students completed the high-stakes assessment in the Winter of 2011. Sixty-six (75%) were successful in completing the OSCE on the first attempt. On the second attempt, 18/22 (81.8%) were successful, and no students failed the third attempt. Eighty-five (96.5%) successfully completed their first attempt of the 6-day clinical patient care assessment. After remediation, all remaining students were successful on their second attempt. **Implications:** A two-part high-stakes standardized clinical assessment that includes both simulation and actual patient care components is a unique method that allows for comprehensive assessment of clinical skills prior to graduation.

**Longitudinal Study on the Effectiveness of an Integrated Elective Course in Pain Management and Palliative Care.** Elizabeth J. Unni, Roseman University of Health Sciences, Justin Kullgren, Roseman University of Health Sciences, Rajan Radhakrishnan, Roseman University of Health Sciences. **Objectives:** Studies have emphasized the importance of integrating basic and clinical sciences for improving learning among health sciences students. Faculty at the Roseman University College of Pharmacy developed an integrated Pain Management and Palliative care elective course and offered it prior to APPE rotations. Since pain is a condition that the pharmacists come across everyday in their practice, the long-term effectiveness of this integrated pain course was investigated among students during their APPE rotations, and later in their practice as pharmacists. **Method:** The 3-week course was offered in the summers of 2010 and 2011. Students from both the summers were surveyed in the sixth block of their APPE rotations. Students from the summer of 2010 were also surveyed almost a year after they started working as pharmacists. The aim of the surveys was to gain their perception about the class as well as the utility of the course in their everyday practice. **Results:** Of the 37 students who took the course over the two years, 25 responded to the survey which was send out during their APPE rotations. The response rate from the practicing pharmacists was 43%. The overall response to the surveys from both the cohorts was positive. Majority of the respondents agreed to the usefulness of the class as well as their confidence regarding the knowledge of pain medications. **Implications:** Integrating basic and clinical sciences in teaching therapeutic courses might be a strategy that can be adapted by pharmacy faculty to increase learning effectiveness on a long-term basis.

**Measuring the Change in Attitude About Addiction in Pharmacy Students Who Attend Mutual Support Groups.** Michael W. Neville, The University of Georgia, Michael Fulford, The University of Georgia, Beth Jarrett, The University of Georgia. **Objectives:** This study was designed to evaluate the attitudes of pharmacy students about patients with alcohol use disorders. **Method:** One hundred and five P3 students were invited to participate. Study participants were asked to complete the SAAPPQ, a validated tool designed to evaluate the attitudes of general practitioners who work with patients with alcohol problems, at baseline. The intervention, attendance at support meetings, was completed during the semester. At semester’s end, study participants were again invited to complete the questionnaire. Means were compared using independent samples t-test and one-way ANOVA. **Results:** One hundred and two students (60 females, 40 males) completed the pre-intervention survey. Thirty-four percent had a family history of alcohol abuse and 13% had previously attended an alcoholics anonymous meeting. Ninety-one students (46 females, 28 males) completed the post-intervention survey. Twenty-five percent had a family history of alcohol abuse and 97 percent had completed the pre-intervention survey. Statistically significant changes in the areas of role legitimacy, motivation, task specific self esteem, or work satisfaction were observed. **Implications:** Mutual support group participation can positively impact the attitudes of pharmacy students and prepare them for practice.

**Mock Rounds: Introducing Third-year Pharmacy Students to Verbal Patient Case Presentations at Two Schools of Pharmacy.** Rucha S. Bond, The University of New Mexico, Krista L. Donahoe, Virginia Commonwealth University, Laura A. Morgan, Virginia Commonwealth University. **Objectives:** To describe the results of a collaboration between two schools of pharmacy in the development, implementation, and assessment of a simulated medical rounds activity. **Method:** Faculty from the University of New Mexico (UNM) and Virginia Commonwealth University (VCU) schools of pharmacy worked together to develop, implement, and assess a verbal patient case presentation activity in the third year pharmacy labs. Prior to the activity, a presentation on patient case presentations and professionalism was delivered to students at each campus. During the lab session students were divided into groups of 5-6 with a pharmacy resident assigned as the “attending.” Each student in the group was assigned a different infectious disease case to present as if participating in medical rounds. Residents evaluated students on professionalism and case presentation skills using a Likert-type scale (1=Needs Improvement,

2=Satisfactory, 3=Exceeds Expectations). Students evaluated residents on their professionalism and teaching abilities using the same scale. The same presentation, patient cases, and evaluation forms were used at both schools. Results: The activity was successfully implemented at both universities with 194 students participants. Students scored highest in the areas of respectfulness (Ave: 2.88) and confidence (Ave: 2.76) with the lowest scores in the areas of logical flow of presentation (Ave: 2.58) and ability to answer questions (Ave: 2.56). Residents scored highly in all areas (Ave: 2.9). Implications: Such successful collaborations may be useful in expanding activities and sharing workload in lab-based courses.

Moving from Knowledge to Evaluation: Multiple Answer as an Advanced Assessment Strategy. Whitney White, Samford University, Daniel L. Halberg, Samford University, Robert M. Riggs, Samford University, Anna Meador, Samford University. Objectives: To determine if multiple-answer (MA) format is a practical assessment method relative to essay and whether MA scoring variations affect discriminatory power. Method: Enrolled students ($n=108$) studied a required article prior to an in-class quiz. The quiz was administered in two versions, each given to approximately half the class, and contained two question domains. Version one assessed domain one using essay versions, each given to approximately half the class, and contained article prior to an in-class quiz. The quiz was administered in two natory power.

Outcomes of Underserved Primarily Latino Patients with Uncontrolled Diabetes. Hoai-An Truong, Mercer University, Angela O. Shogbon, Mercer University, Kathryn M. Momary, Mercer University. Objectives: To determine the impact of an interprofessional navigator-facilitated care coordination algorithm on diabetes control in underserved, primarily Latino patients using a safety-net clinic as their medical home. Method: An algorithm was created by an interprofessional team to coordinate diabetes-related services (diabetes self-management education, medication therapy management, nutrition, endocrinology) based on specific criteria for patients with poorly controlled diabetes. Over a six month period, patients with A1C≥9% were identified through an electronic registry and contacted via phone by a navigator to schedule the recommended services based on the algorithm. A tracking tool was designed and included in the patient’s medical record, indicating dates of navigator contact, selected diabetes-related services and the appointment dates for such services. A1C was the primary outcome measure evaluated both before and after receiving referral algorithm services (i.e. patients served as their own control). Paired Student’s t-test was used to analyze the data. Results: Pre- and post-service A1C data was available for 45 patients. Average A1C decreased from 10.6 ± 2.1% to 8.8 ± 2.1% (p<0.001). Among the 34 patients who demonstrated improvement in A1C from baseline (76%), the average decrease was 2.5 percentage points (10.6 ± 1.1% to 8.1 ± 1.7%), p<0.001. Thirty-two (76%) of the 45 patients were Latino. In that subset of patients, average A1C improved from 10.6 ± 1.2% to 9.1 ± 2.2% (0=0.0013). Average A1C for non-Latino patients improved from 10.4 ± 1.0 to 8.0 ± 1.4% (p=0.0004). Implications: Interprofessional navigator-facilitated care coordination had a positive and rapid impact on A1C for low income, uninsured, primarily Latino patients with poorly controlled diabetes.

Novel Methods to Engage Doctor of Pharmacy Students in a Toxicology Elective Course. Michael C. Thomas, South University. Objectives: The primary objective was to determine if there is a difference in student performance and self-assessment of confidence on core toxicology questions assessed at the initiation and completion of an elective clinical toxicology course. Method: Nearly 50% of this course was purposely designed with 20 student led presentations on pre-selected core toxicology topics. Student enrollment was capped at 20 students. When students were not presenting, they may be assigned as an evaluator, to question the presenter, or to write quiz questions. An assessment was developed to determine if these methods were effective. A baseline assessment consisting of 25 core toxicology questions was administered; the total possible score could range from 0 to 25. Students assigned their level of confidence, rated 0 to 10 (0=no confidence and 10=complete confidence) for each answer choice. The overall confidence score could range from 0 to 250. An identical assessment was administered a second time at the conclusion of the course. Descriptive statistics and paired students t-test were used to analyze the primary outcome. Results: Preliminary analysis of the primary objective demonstrated the baseline mean score was 9.1 ± 2.1 versus 16.6 ± 3.7 at the completion of the course, p<0.001. The overall confidence level at baseline was 63.7 ± 35.3 and at the conclusion of the course was 171.0 ± 36.0, p<0.001. Implications: This study supports the use of intensive student activities to engage involvement and promotes both learning and confidence in a clinical toxicology elective course.

Oral Examinations: Students’ Self-assessment and Faculty Evaluation of Communication of Clinical Recommendations. Lisa M. Lundquist, Mercer University, Angela O. Shogbon, Mercer University, Kathryn M. Momary, Mercer University. Objectives: To compare students’ self-assessment and faculty evaluation of communication of clinical recommendations during oral examinations. Method: For two consecutive years in the Cardiovascular/Renal therapeutics course, an individual and group case-based oral examination were given to second-year pharmacy students. Students were provided with cases prior to each oral examination. In addition to evaluation of pharmacotherapy knowledge, faculty evaluated students’ communication skills using a 8-item rubric assessing rapport (confidence, non-verbal) and presentation of therapeutic recommendations. Faculty evaluated these skills on a 4-point Likert scale with 1=needs significant development and 4=accomplished. Immediately following each oral examination, students self-assessed their communication skills using the same rubric. This study was approved by the IRB and students voluntarily signed informed consent prior to participation. Students’ self-assessments were compared to faculty evaluation of communication skills using descriptive statistics and paired t-tests. Results: A total of 261 (96.3%) students completed self-assessments. For the individual oral examination, mean(SD) student self-assessment and faculty’s evaluation of communication were 3.14(0.54) and 3.49(0.44), respectively.
For the group oral examination, mean(±SD) student self-assessment and faculty’s evaluation of communication were 3.32(0.49) and 3.60(0.34). Faculty evaluations in both examinations were higher than students’ self-assessments (p<0.001). In addition, students’ self-assessment of communication increased from the individual to the group examination (p<0.001). Implications: Students’ self-assessment of communication skills were consistently lower than faculty’s evaluation scores. Students’ lower self-assessment may be due to a lack of practice in the verbal communication of clinical recommendations. Greater utilization of formal case-based oral examinations may help to improve students’ confidence and self-assessment of communication skills.

Outcomes from a Regional Resident Teaching Certificate Program.
Crystal D. Obering, University of Missouri-Kansas City, Valerie L. Ruehler, University of Missouri-Kansas City, Kristen DiDonato, University of Missouri-Kansas City, Linda S. Garavalia, University of Missouri-Kansas City, Peggy G. Kuehl, University of Missouri-Kansas City, Erica J. Ottis, University of Missouri-Kansas City, Steven C. Stoner, University of Missouri-Kansas City. Objectives: A resident teaching certificate program was developed to meet the needs of residents who desired to increase their teaching competencies. Method: Program participants completed three self-assessments of knowledge and confidence in 22 areas of pharmacy education, yielding 44 multiple choice questions rated on a Likert-scale (1 = strongly disagree to 5 = strongly agree). Additionally, residency directors completed a midpoint evaluation of the program to provide their impression of the benefit of this program to their residency program. Results: Two cohorts of residents participated, including 19 residents from 10 programs at 2 locations in 2010-11 and 31 residents from 16 programs at 4 locations in 2011-12. Locations were linked using distance technology. Baseline modal responses for each cohort indicated 18 questions with average responses of disagreement (disagree somewhat or strongly disagree) and 7 showing >50% disagreement for both cohorts. These identified baseline deficits were in writing a teaching philosophy, creating a teaching portfolio, ACPE accreditation, curriculum development, course development, syllabus creation, and addressing difficult students. The modal level of agreement increased at midpoint, though higher levels of disagreement did exist in addressing students’ behaviors and writing and assessing exam questions. At final evaluation all questions had responses of agreement or neutrality. Implications: These data indicate that the program was beneficial for their residents and program overall. Implications: Identification of areas where residents lack knowledge or confidence can provide direction for mentoring programs to target the needs of residents who may become new faculty members. Such programs will increase residency programs ability to meet their residents’ needs.

Outcomes from an Employer-based Wellness Program for City of West Palm Beach: An Exploratory Approach. Marille L. Santamarina, Palm Beach Atlantic University. Objectives: To evaluate the advantages of a site-based employee interdisciplinary lifestyle modification program over a 10 month period. Method: Employees for the City of West Palm Beach were eligible for inclusion into the Shape4Health wellness program. One-hundred sixty three employees enrolled. Demographics and baseline biometric values: height, weight, waist circumference, body mass index (BMI), blood pressure, fasting blood glucose, A1C and lipid profile were obtained during their annual health fair. Biometric measures were collected and hourly group-educational sessions were delivered every 5 weeks by an interdisciplinary team (pharmacists, nutritionists and physicians) during the 10 month program. A web-based platform was created to review biometric measures and wellness program progress. Results: Data was analyzed using SPSS statistical software. Seventeen percent of the initial enrollees had complete data during the 10 month program to establish pre and post biometric comparisons. Program participants successfully attained statistically significant decreases in systolic blood pressure (p<0.001), waist circumference (p=0.040) and HbA1C (p=0.008). No statistically significant differences were found for diastolic blood pressure, BMI, weight, FPG or lipid profile. When initial biometrics were compared to biometrics obtained just prior to the holiday season, a statistically significant decrease in weight and BMI were also found (p=.005 and p=.006, respectively). Implications: Healthier biometric measures may be attained and sustained in an employer-based wellness program delivered by an interdisciplinary healthcare team; however, high attrition rate is a disadvantage commonly encountered in adopting long-term lifestyle modifications.

Partnership Between Graduate Students and P1 Pharmacy Students Improves Application of Research Related Knowledge. Kristina E. Ward, The University of Rhode Island, Cynthia J. Willey, The University of Rhode Island, Eunsun Noh, The University of Rhode Island, Norma J. Owens, The University of Rhode Island. Objectives: To examine the effect of partnering graduate students in pharmacoepidemiology with first professional year pharmacy students on knowledge of study methodology. Method: The Graduate and Professional Program partnership (GAPP) was developed to address consistently low milestone examination scores on basic statistical and study methodology concepts. The GAPP partnership involved: 1) devoting pharmacoepidemiology graduate student class time to teaching techniques, and 2) graduate student led small-group discussion sessions and mentoring outside the classroom via an online response system. We analyzed relevant milestone exam scores of first-year pharmacy students from 2001 to 2011 to evaluate knowledge improvement after the partnership experience. We further analyzed trends in the URI College of Pharmacy End of Semester (EOS) survey between 2008 and 2011. Results: Prior to the implementation of the GAPP, average scores on literature review and statistics concepts ranged from 38 to 62%, with the most frequent scores being 49% and 52% (during 4 of 7 years). After the GAPP intervention year, the average score on research-related knowledge increased to 81% (±16.5), and 100% of literature search and statistics concepts were achieved. Differences between pre- and post-GAPP years were statistically significant (p<0.05). This improvement is not likely to be a cohort effect because other content areas measured in the milestone exam did not show significant improvement after the GAPP experiment. In addition, EOS survey results increased from 59 to 72% for agreement that “small group discussion of articles was helpful” after graduate student participation. Implications: Graduate student participation in small group discussions, and technology-based mentoring was associated with substantial improvement in statistics-related knowledge and study methodology concepts in first professional year pharmacy students.

Patient-care Documentation Skills: Use of a Standardized Format for Pharmacotherapy Notes in a Therapeutics Course. Angela O. Shogbon, Mercer University, Lisa M. Lundquist, Mercer University, Kathryn M. Momary, Mercer University. Objectives: To evaluate students’ documentation skills before and after implementation of a standardized approach for patient-focused pharmacotherapy notes (Subjective, Objective, Assessment, Plan, Education [SOAPE]) in a therapeutics course. Method: Five, small-group, patient-case based discussion sessions were incorporated into a cardiovascular therapeutics course for P2 students. Students were provided a case prior to class to develop a SOAPe note for discussion. Then, students worked-up a second case and submitted a SOAPe note for a grade. Pre- and
post-tests assessing students’ confidence level in preparation of SOAPE notes were administered at the beginning and end of the course, respectively. Perception of confidence was ranked on a 4-point Likert scale with 4=strongly agree and 1=strongly disagree. This study was approved by the IRB and students voluntarily signed informed consent prior to participation. Scores on the pre-test, post-test, and student performance on SOAPE notes were compared utilizing descriptive statistics and paired t-tests. Results: A total of 121 (91.7%) students completed the pre- and post-tests. There was improvement in students’ confidence in writing SOAPE notes with mean(SD) scores of 2.89 (0.46) on pre-test and 3.53(0.36) on post-test (.001). Students’ mean(SD) performance on the first and final SOAPE note in the course was 89.6%(8.34) and 93.2%(6.71), respectively (.001). There was no significant difference in confidence or performance scores between students with prior experience in writing SOAPE notes and students without experience. Implications: Use of a standardized format for patient-focused pharmacotherapy notes may enhance students’ understanding and confidence to perform this vital task on experiential patient care rotations and in clinical practice.

Perceived HIV Risk and Safe Sex Practices Among College Students Compared to the Community. Candace N. Sampson, Hampton University, Jonathan S. Newsome, Hampton University. Objectives: To provide HIV screening and education to the students of Hampton University and the Downtown area of Newport News, Virginia; to determine sexual behaviors of each participant; to evaluate patient population’s perceived HIV risk; and to determine whether individuals currently seeking higher education follow safe sex protocol more than individuals in a lower income, underserved community. Method: An approval for a non-experimental, cross-sectional study of participants was obtained from the institutional review board. Current enrolled students and community residents, both males and females, over the age of 17, who provided written consent, were assessed using a test of knowledge survey. The survey tool was utilized to determine the sexual behaviors and perceived HIV risk of each participant and the responses were compared between the two populations. Results: Of the 100 participants surveyed, 86% were college students and 14% were community residents. Approximately 63% of on campus students engaged in sex without a condom within the past 12 months compared to 50% in the community. Forty-four percent of all participants had never gaged in sex without a condom within the past 12 months compared to 30% community residents. Approximately 63% of on campus students engaged in sex without a condom within the past 12 months compared to 50% in the community. Forty-four percent of all participants had never gaged in sex without a condom within the past 12 months compared to 30% community residents. Forty-four percent of all participants had never gaged in sex without a condom within the past 12 months compared to 30% community residents. Forty-four percent of all participants had never gaged in sex without a condom within the past 12 months compared to 30% community residents. Forty-four percent of all participants had never gaged in sex without a condom within the past 12 months compared to 30% community residents. Forty-four percent of all participants had never gaged in sex without a condom within the past 12 months compared to 30% community residents. Forty-four percent of all participants had never gaged in sex without a condom within the past 12 months compared to 30% community residents. Forty-four percent of all participants had never gaged in sex without a condom within the past 12 months compared to 30% community residents. Forty-four percent of all participants had never gaged in sex without a condom within the past 12 months compared to 30% community residents.

Implications: The results indicate that safe sex practices are equivalent or even worse amongst college students compared to the residents in the community. In addition, ongoing awareness programs are needed to provide education regarding HIV risk factors to college students and the community. Based on the data, individuals within the community appear to be uncomfortable with knowing their status.

Perceived Utility of a Distance Learning System in a Professional University by Students and Faculty. Benjamin Chavez, University of Hawaii at Hilo, Paula Zesotarski, University of Hawaii at Hilo. Objectives: Many colleges of pharmacy are using distance learning technologies to reach students in different cities within a state. At the University of Hawaii at Hilo, we have a unique situation in that we are not only teaching in different cities, but on different islands. We conducted a survey to identify the perceived strengths and weaknesses of our current distance learning technology (Polycom with audio and video). Method: Two surveys were distributed online. One was sent to faculty who teach using Polycom (n=6), while the other was sent to second, third, and fourth year professional pharmacy students who have been taught using Polycom (n=259). Results: A total of 167/259 students (64%) responded. Fifty-seven percent of students felt Polycom lectures were less effective, while 43% felt they were just as effective, as lectures given in person. Forty-seven percent felt they learned more from in-person lectures. All faculty who responded (4/6), felt Polycom was less effective. Thirty-nine percent of students said they were more likely to attend lecture if it was in person, while 59% said it had no influence on their attendance. Both faculty and students listed technical difficulties, lack of participation by students, and inability to ask questions as the biggest challenges to delivering lectures via Polycom. Implications: Based on the results of the survey, teaching by faculty can be modified to suit the strengths and weaknesses of the Polycom. In particular, faculty can improve the distance-learning courses by incorporating new technologies that facilitate different methods of faculty-student interaction.

Performance-Based Assessment Program – Lessons Learned from an Initial Exam Offering. Janice R. Frueh, Southern Illinois University Edwardsville, Erin M. Timpe, Southern Illinois University Edwardsville, Jingyang Fan, Southern Illinois University Edwardsville, Jessica L. Kerr, Southern Illinois University Edwardsville, Melanie Hicks, Southern Illinois University Edwardsville. Objectives: To describe and assess the initial experiences with an Objective Structured Clinical Exam (OSCE) in a school of pharmacy not associated with an academic health center Method: Implementation began in June 2010. Faculty development sessions for case development and an OSCE trial run were completed by March 2011. Final case validation and exam scoring occurred in August 2011. A video-recorded OSCE case, an example assessment form, and information on exam logistics were reviewed at student preparatory sessions in September/October 2011. The initial OSCE commenced in October 2011, consisting of three, 7-minute stations and assessed 3rd year professional students. Stations were evaluated in real-time by faculty. Students and evaluators completed surveys about preparation and process following the exam. Results: Of 78 students completing the exam, 75 (96%) passed the first time. Strong performance areas included history taking and communication skills. Items related to decision-making skills with pharmacotherapy management and follow-up had the lowest scores. Sixty-six students (85%) strongly agreed/agreed the curriculum prepared them for the OSCE’s content; however, only 45 (58%) felt confident about passing the exam. Students appreciated the standardized patients, felt stations were realistic, but wanted electronic drug information resources and more time. Evaluators reported the exam was well organized and would like more direction on assessing communication skills. Implications: Overall, the initial experience was successful. Outcomes will be used to revise and expand the performance-based assessment program. OSCEs require significant resources to implement and sustain. Our experiences may assist schools/colleges of pharmacy in similar academic environments considering similar programmatic assessments.

Performance-based Assessment for an Advanced Self-Care Elective. Cynthia A. Wuller, Southern Illinois University Edwardsville, Miranda J. Wilhelm, Southern Illinois University Edwardsville. Objectives: To describe the use of a Performance-based Assessment in the pharmacy aisle as the final exam for an Advanced Self-Care elective Method: The final exam in the Advanced Self-Care elective was held in the nonprescription medication aisle at a local pharmacy. Each student arrived at the pharmacy at an assigned time and was directed to the appropriate aisle. A simulated patient approached the student with a self-care related question. The student asked questions to assess the patient, determined the problem, and then made a nonprescription medication recommendation. Once selected, the student educated the patient on how to correctly take the product to relieve the problem.
The student had five minutes to complete the interaction. The course instructors served as evaluators and completed a rubric during the interaction to score the exam. The student then moved out of the aisle where they had five minutes to complete a self-reflection of the interaction. This served as an opportunity for the student to earn back a portion of points missed. **Results:** The exam has been given three times to a total of 65 students. Grade distributions on the Performance-based Assessment were 90.3%, 80.2% and 87.6% for the first, second, and third offerings respectively. Verbal feedback from students has been positive. While students reported being nervous, they felt the simulated real world experience was valuable. **Implications:** The Performance-based Assessment in the Advanced Self-Care elective tested the student’s knowledge base and communication skills when making the proper nonprescription medication recommendation. 

**Perspectives of Pharmacy Faculty on E-professionalism with Respect to Social Networking Sites.** Therese I. Poirier, Southern Illinois University Edwardsville, Jennifer Schneider, Southern Illinois University Edwardsville. **Objectives:** To identify perspectives from pharmacy faculty regarding e-professionalism of students and faculty on social networking sites. **Method:** Forty-three faculty at a School of Pharmacy were surveyed to determine the level of agreement with fifteen statements using a five point Likert scale **Results:** Seventy-two percent of faculty responded to the survey. Of these, 74% indicated having a profile on a social networking site. Eighty-four percent of the respondents were 45 years of age or younger. The highest level of disagreement (81%) occurred with the statement that social networking sites affects one’s perspectives on professionalism with regards to use of social networking sites. Significant differences (p < 0.05) were noted between faculty with and without a social networking profile in 9 of the 15 statements. The only significant difference (p < 0.05 and F = 3.743) noted among the age groups were between faculty in the 26-35 years and those 46 and older when indicating the relevance of social networking sites to professionalism. **Implications:** Familiarity with using social networking sites affects one’s perspectives on professionalism with regards to use of them. There may also be generational differences among faculty.

**PharmD Admissions Essays: Reliability Improvement Attempts & Consequences.** Michael J. Peeters, The University of Toledo, Kimberly A. Schmude, The University of Toledo, Caren L. Steinmiller, The University of Toledo. **Objectives:** Admission essays are commonly used in screening applicants to PharmD programs. Inter-rater consistency in scoring essays is essential. Objective: To assess reliability consequences with implementation and further revisions during our admission essay rubrics development **Method:** Rubrics were implemented into essay scoring for admissions to further improve inter-rater reliability. Two different rubrics were developed for internal admissions after 2 years of university (IA) and for contingent admissions of very high performing high school students (CA). For CAs, 3 raters scored all essays annually. For IAs, four groups of 3 raters scored essays annually. Raters for each group changed annually. The developed IA rubric was an analytic type and revised a 5-point scale into a 20-point scale. The CA rubric developed was a holistic type and revised a subjective 50-point scale into a 4-point scale. **Results:** While internal consistency was >0.7 in most rater groups in most years, rubric use and training each impacted inter-rater reliability measures. For CA essay scoring, the interclass correlation without a rubric was 0.59. This improved to 0.59 & 0.64 with a holistic rubric and later to 0.77 with added rater training of rubric scoring. Meanwhile, IA scoring prior to using a rubric averaged 0.59 & 0.72, improved to 0.64 & 0.84 after rubric implementation, and after training improved to 0.87. **Implications:** This study illustrated reliability consequences with developing essay rubrics. Overall, introduction of a rubric improved reliability indices while rater training added further improvement. Regardless of rubric type (analytic or holistic), rubric use and training improved inter-rater reliability.

**Pharmacist, Resident and Student Interventions at a Newly Developed Free Clinic.** Gina M. Prescott, University at Buffalo, The State University of New York, Linda M. Catanzaro, University at Buffalo, The State University of New York, Amanda MacEvoy, Middleport Family Pharmacy, Jineane V. Venci, University at Buffalo, The State University of New York, Joshua R. Sawyer, University at Buffalo, The State University of New York, Erin M. Slazak, University at Buffalo, The State University of New York. **Objectives:** To determine the role and interventions of pharmacists in an interdisciplinary free clinic setting. **Method:** Faculty members, residents and students volunteering at a newly developed free clinic site documented patient encounters in an electronic pharmacy log two to three times weekly from June 2011 through January 2012. Documentation during the encounter included date, patient name, intervention(s), type of intervention(s), pharmacist, and follow up activity. Descriptive statistics were used to report number of patient encounters, individual patient encounters, medications and classes of medications, and type of intervention(s). **Results:** 265 patient encounters occurred at the free clinic over 7 months. There were 362 individual documented pharmacist interventions, with over 180 of them related to a specific medication. The most common interventions were with enrollment of patients into patient assistance programs (n = 37) and follow up on these enrollments (n = 116). Conducting a medication history (n = 39), general medication counseling (n = 27), assisting with medication sample selection (n = 24) were also common. Medications related to diabetes mellitus (n = 56) or cardiovascular disease (n = 51) were the most common medication classes associated with interventions. **Implications:** Pharmacists have a multipurpose role in providing interdisciplinary care in a free clinic setting. Although most interventions are with patient assistance programs and medication procurement, the role of the pharmacist in this setting has expanded as a permanent pharmacy presence has been established during the past four months.

**Pharmacy 101: An Introductory Boot Camp to Community Pharmacy Services for Non-Practicing Pharmacy Faculty.** Kevin O. Rynn, Rosalind Franklin University of Medicine and Science, Sarah S. Garber, Rosalind Franklin University of Medicine and Science, Marc S. Abel, Rosalind Franklin University of Medicine and Science, Kelly Stegh, SuperValu (Jewel/Osco) Pharmacies, Rochelle Allen, SuperValu (Jewel/Osco) Pharmacies, Janeen Winnike, SuperValu (Jewel/Osco) Pharmacies, Gloria E. Meredith, Rosalind Franklin University of Medicine and Science. **Objectives:** Faculty need to remain up to date with contemporary pharmacy practice. The College of Pharmacy and SUPERVALU (Jewel/Osco) Pharmacies have developed a Pharmacy 101 boot camp. The purpose of the program is to familiarize non-practicing pharmacy faculty with community pharmacy in hopes of better serving students and incorporate practical examples in the classroom. **Method:** In conjunction with SUPERVALU (Jewel/Osco) Pharmacies a one-day curriculum was developed and presented at the corporate training center. Upon completion of the program participants were surveyed asking to rate program content, speaker, and the overall effectiveness of the day. Participant demographics were collected. **Results:** Ten faculty attended the program with a 90% survey response rate. Participants were primarily from the Pharmaceutical Sciences Department (77.8%), were full professors (66.7%) with
Pharmacy Student Self-testing as a Predictor of Exam Performance. David W. Stewart, East Tennessee State University, Peter C. Panus, East Tennessee State University, Jim Thigpen, East Tennessee State University, Nicholas Hagemeier, East Tennessee State University, Lauren K. Brooks, East Tennessee State University. Objectives: To determine if benefit exists in allowing students to self-test over relevant material as they progress through a professional course. Method: A total of 1,342 multiple choice questions were developed for pharmacy students to self-test for a pathophysiology course. Prior to each examination, students were allowed to take online quizzes which were randomly generated and related to the exam content. Quizzes were scored immediately, and students were shown the incorrect questions along with all answer choices. A matrix of intercorrelations and repeated measures ANOVA were generated using PASW Statistics Version 19 (IBM, Armonk, NY) to evaluate number of quiz attempts, highest attempt score, lowest attempt score, average attempt score, last attempt score, undergraduate GPA, and composite PCAT in relation to exam grade. Results: Seventy-seven of 79 students took advantage of self-testing and completed a total of 7,042 attempts. For the four exams, average quiz attempts score had the highest correlation, R = 0.591, 0.670, 0.550, and 0.373 respectively, to exam score (p ≤ 0.001 for each comparison). For each student who took advantage of self-testing, a paired analysis revealed exam score was significantly higher on the first three exams when compared with quiz attempts average. Implications: Literature indicates self-testing strategies increase recall ability as compared to more commonly employed study techniques. Self-testing opportunities in the pharmacy curriculum could increase student retention of course materials and provide feedback to educators regarding student learning while offering students an indication of their comprehension.

Pharmacy Students’ Attitudes Toward the Elderly. Kisha O. Gant, Xavier University of Louisiana, Lori D. Crawford, Xavier University of Louisiana, Joshua Ward, Xavier University of Louisiana. Objectives: The purpose of this study is to assess the attitudes of pharmacy students toward the elderly by using the Kogan’s Attitudes Toward Old People Scale (KAOP). Method: A randomized version of the validated Kogan’s Attitudes Toward Old People Scale (KAOP) was administered via Blackboard to 577 first- (P1), second- (P2), third- (P3), and fourth-year (P4) pharmacy students over two to five days per class. The KAOP survey consisted of thirty-four Likert-scaled questions with seventeen negatively framed and seventeen positively framed questions. KAOP scores range from 34 to 204 with a higher score denoting a more favorable attitude and 102 being considered as a neutral attitude. Five additional questions were included to evaluate age, gender, pharmacy school classification, race/ethnicity, and previous healthcare experience. The results were analyzed using SPSS (v.12) to conduct descriptive, one-way ANOVA, Kruskal-Wallis, and multiple linear regression statistical tests. Results: One-hundred and twenty-five students completed the KAOP. The total scores between the classes were found to be not statistically significant (p = 0.528). The mean scores for the P1, P2, P3 and P4 classes were 135, 134, 130, and 133, respectively. Implications: At Xavier University of Louisiana, students are exposed to elderly patients beginning in the P1 year through the introductory pharmacy practice experience (IPPE). A component of the IPPE is a required semester long service-learning experience where P1 and P3 students are grouped together to provide medication and nutrition counseling to senior center residents. Longitudinarily incorporating more of these experiences throughout the curriculum may result in an increase in KAOP scores and result in improved geriatric care.

Pharmacy Students’ Experience and Comfort with Herb/Dietary Supplement (HDS) Questions and Information Resources. Lana Dworkin-Camilo, Massachusetts College of Pharmacy and Health Sciences-Boston, Maria D. Kostka-Rokosz, Massachusetts College of Pharmacy and Health Sciences-Boston. Objectives: To evaluate PY3 pharmacy students work experience and comfort level processing HDS questions, work site access and use of information resources and their perception of pharmacist comfort level answering HDS questions. Method: A 20 question survey was administered during the Over-the-Counter Drugs/Self-Care required course. Turning Point Software from Turning Technologies, an automated response system collected anonymous and voluntary responses. Results: Three hundred and six students responded to the survey, but not all answered each question. Seventy-eight percent currently held a pharmacy position – 63% worked in retail, 25% in hospital and 10% in other settings. Six percent of respondents reported receiving questions about HDS on a daily basis; 31% weekly; 42% monthly and 21% never. Only 7% of students believed that their pharmacy had a sufficient number and quality of resources to handle questions. Forty-six percent reported not having access to any HDS resources and 35% reported having no experience with these resources at their place of employment. Eighty-three percent of students did not feel comfortable processing HDS questions and 65% believed that their pharmacists did not have a sufficient level of comfort either. Implications: Healthcare providers are increasingly asked to respond to patient questions about HDS. Based on these results, pharmacies should offer sufficient number, quality and access to information resources and provide additional education for their practicing pharmacists. Although pharmacy students in the current curriculum are exposed to these resources, lack of application at work precludes students from further developing and expanding their skills and information base.

Pharmacy Students’ Reflection to Assess Their Own Patient Counseling Skills with the Assistance of Videotaping. Kristine B. Marcus, Pacific University Oregon, Marianne I. Krupicka, Pacific University Oregon, Lindsay Christensen, Pacific University Oregon, Melanie Foeppl, Pacific University Oregon. Objectives: To determine if videotaping augments student reflection of their counseling performance. Method: All second year students in our three year modified block curriculum participate in counseling role play. On two separate occasions students counseled faculty on a new prescription. The faculty provided brief verbal feedback after each counseling session. The students responded to open and closed- ended reflection questions immediately after the consultation and again after reviewing a videotape of their counseling session. Results were pooled and investigator consensus was utilized in categorizing student comments into 19 unique categorical responses which represented three larger common themes.
The common themes were: communication competencies, adherence to counseling process, and student feelings. **Results:** Ninety-four students were available to complete survey questions after each counseling session and again after reviewing the videotape. Of the three general themes of comments provided by students during their reflections, communication competencies were more likely to be commented on after viewing the videotape compared to immediately after receiving feedback from their faculty grader. This was true when the question was posed to students both as “what went well” ($p < 0.001$) and “what would you do differently” ($p < 0.001$). This was not true for the other themes surveyed. After watching the videotape, students were more likely to mention specific verbal and non-verbal communication skills. **Implications:** Videotaping enhanced student evaluation of the effectiveness of their communication competencies during a role play but did not provide additional benefit with regard to self-assessment of their counseling process or feelings.

**Physicians’ Expectations of Clinical Pharmacy Practice in Acute Care Settings.** Sarah Stephens, The University of Utah, Patricia L. Orlando, The University of Utah. **Objectives:** To determine physicians’ expectations of clinical pharmacists, if current expectations are being met, and define their roles and relative importance to physicians in an acute care setting. **Method:** A single electronic questionnaire was submitted electronically to physicians twice. Each question assessed level of agreement with each statement using a Likert scale where $1 =$ strongly disagree, $2 =$ disagree, $3 =$ neutral, $4 =$ agree, and $5 =$ strongly agree. Demographic information was collected including practice setting, hospital-based (non house-staff), or medical resident (house staff), specialty, and years since graduation from medical school. **Results:** Approximately 20% of physicians completed the survey. All physician respondents were currently practicing in a tertiary care hospital with pharmacists that provide clinical services. Overall, physicians valued pharmacists as a member of the health care team and utilized typical clinical services. Pharmacists providing drug information and attending patient care rounds received the highest ratings. Physicians valued the medication reconciliation process, but noted that discharge medication reconciliation the most important. Interestingly, selection of prescription drugs was a valued asset, whereas selection of non-prescription drugs was not. Pharmacist documentation in the medical record was viewed as inconsistent, but would be a valued asset if standardized. Pharmacist duties were not viewed as standard or consistent across facilities. **Implications:** Physicians value and utilize acute care clinical pharmacists and feel they are very important to patient care. However, lack of standardized practice or documentation in the medical record is a limitation that should be addressed. These data are an important consideration for defining the roles and responsibilities of clinical pharmacists in the acute care setting.

**Point of Care Documentation of Clinical Interventions by Pharmacy Students on Advanced Pharmacy Practice Experiences.** John A. Kappes, South Dakota State University, Joe D. Strain, South Dakota State University, Jodi R. Heins, South Dakota State University, Debra K. Farver, South Dakota State University. **Objectives:** Evaluate a point of care documentation system designed for internet mobile devices for student utilization on Advanced Pharmacy Practice Experiences (APPEs) to promote development of documentation skills, allow for assessment of interventions, and provide institutions quantitative data on student impact. **Method:** A documentation tool was developed utilizing QuestionPro. Students on Faculty APPEs were requested to answer ten questions for each intervention via mobile or desktop/laptop device. Follow-up surveys were completed by students and faculty. **Results:** Sixty-four students on 85 APPEs completed 2,370 interventions, which averages 27.9 (Median = 21) interventions per student per rotation at a rate of 1.1 (Median = 0.84) interventions per student per day. The average time to document each intervention was approximately 1 minute. Most often interventions were made for patients with a primary admitting diagnosis of infectious disease (25.01%). The most common interventions were dose adjustments (13.77%), addition of a medication (11.53%), and monitoring laboratory order (10.73%). Nearly all interventions were accepted by providers (96.58%). The majority of students utilized a desktop/laptop computer (71.1%) for documentation. Overall 60% of students (Desktop/laptop= 59.2%, mobile device= 63.6%) rated the documentation tool as “very easy to use.” On a scale of one to ten, 85.7% of Faculty rated a seven or greater on their overall opinion of the documentation tool. **Implications:** The option to use either a mobile or desktop/laptop device was effective and may impact the extent of student documentation. While most students used a desktop/laptop computer, students using a mobile device found the tool just as easy to use.

**Point of Care Testing by Pharmacists: Serving, Learning and Advancing the Profession.** Laura C. Palombi, University of Minnesota, Karen M.S. Bastianelli, University of Minnesota, Timothy P. Stratton, University of Minnesota. **Objectives:** The Wellness Initiative of the Northland (WIN) program enables student pharmacists, Pharmacy Practice faculty and local pharmacists to provide free screenings for dyslipidemias, hypertension, diabetes and osteoporosis to medically underserved patients in northeast Minnesota and northwest Wisconsin. **Method:** Since 2009, a total of 160 student pharmacists, 15 pharmacy practice faculty and 30 community pharmacists have participated in disease screenings and education for adult health fair attendees in rural and urban communities every year. **Results:** The WIN program has provided 4,152 point-of-care tests for over 2000 individuals. Of 999 patients who had dyslipidemia screening performed, out-of-range results were obtained for 40.3% of total cholesterol readings, 6.9% of LDL cholesterol readings, 22.5% of HDL cholesterol readings and 12.8% of triglyceride levels. Among 1,292 patients screened for hyperglycemia, 24.8% had glucose levels considered out of range. Of the 831 patients screened for hypertension, 24.3% had levels considered out of range. Of 1,030 patients who underwent bone density testing, 38.7% were considered at risk for osteopenia or osteoporosis. Health fair attendees who had at least one disease screening result out-of-range were referred to their primary health care provider for follow-up care. **Implications:** Community point-of-care disease screenings planned, coordinated and conducted by a School/College of Pharmacy provide not only a public health service to the community, but serve as a vehicle for professional engagement and development for student pharmacists and pharmacists. Point-of-care screenings at community health fairs are an excellent way for pharmacists to advance the profession while providing care for medically underserved members of the community.

**Predicting NAPLEX Scale Scores Using Student Demographics and Performance Data.** Luke D. Stanke, Doneka R. Scott, University of Minnesota. **Objectives:** To develop a statistical model for predicting NAPLEX scores of graduating students. **Method:** Data were collected for 147 graduating students for a single graduating class. Several descriptive variables were collected for each student, including, gender, race, age at graduation, international status, and cumulative GPA. Additionally, three scores from summative exams were used in the analysis. These included an internally developed, third-year didactic knowledge exam, a 3-station objective structured clinical examination (OSCE), and an exam measuring introductory pharmacy practice.
experience outcomes. Multivariate regressions were then run on these variables to predict scale scores for the NAPLEX exam. **Results:** The model accounted for over 64% of the variance in NAPLEX scores, which is equivalent to a correlation of .803. The strongest predictors of NAPLEX scale scores were cumulative GPA and didactic knowledge exam scores. These predictors accounted for 54% of the total variance in scores. Gender, international status and ethnicity were all found to be statistically insignificant. **Implications:** Using the factors in the model, current students can be identified who may need additional support. To improve on this model future research could include additional variables, such as student probation status and admissions data.

**Predicting Success in a Pharmacy Calculations Course: Are GPA or PCAT Scores the Best Predictors?** Kamila Dell, University of South Florida, Glenn J. Whelan, University of South Florida, L. Douglas Ried, University of South Florida. **Objectives:** The purpose of this study was to determine the variables that predict success in a first year pharmacy calculations course. **Method:** Students grades were obtained from the Fall 2011 semester of the pharmacy calculations course and the predictors were obtained from admission data of the students. The percentage grade in the pharmacy calculations course was correlated to cumulative grade point average (GPA), math GPA, science GPA, pharmacy college admission test (PCAT) scores, and gender. Multivariate linear regression analysis was used to select the best predictors of the final percentage grade in the course. Statistical analyses were performed using SPSS version 20. **Results:** Data from 53 students were analyzed. The final percentage grades in the course were significantly correlated with gender of the students, math GPA, science GPA, and the quantitative score of the PCAT. The undergraduate cumulative GPA was not statistically significantly predictive of the grade in the course. The best predictor of final percentage grade in the course was the student’s gender, followed by their pre-admission science GPA, math GPA, and quantitative score of the PCAT. **Implications:** Admission criteria, such as GPA and PCAT scores, are not necessarily the best predictors of success in the pharmacy calculations course. Gender plays a more significant part in the success in the course than other variables. Students with lower PCAT scores or GPAs may be successful in the pharmacy calculations course.

**Preparing Pharmacy Students to Work with Underserved Populations Through Participation in a Student Organization.** Kathryn J. Smith, University of Minnesota, Donoka R. Scott, University of Minnesota. **Objectives:** To understand the effectiveness of preparing pharmacy students to work with underserved populations through involvement with an extracurricular student organization. **Method:** A twenty-item survey was administered electronically to current members and alumni of the Multicultural Pharmacy Student Organization (MPSO) to assess the value of participating in the student organization and their career goals as related to underserved communities. **Results:** 96% of current students involved in MPSO agreed or strongly agreed their involvement will have an impact on their future practice. 86% of pharmacists agreed or strongly agreed that their MPSO involvement has an impact on how they practice pharmacy. Of the current MPSO members, 82% would like to work with an underserved community as a pharmacist. 57% of MPSO graduates are working with an underserved community as a pharmacist. Students and pharmacists indicated MPSO added value to their pharmacy education through providing information about different cultures not covered in the curriculum, broadening their awareness of issues faced by medically underserved communities and providing a safe space where asking questions related to cultural differences was encouraged. 82% of current students and 58% of graduates agreed or strongly agreed they have been prepared to eliminate healthcare disparities through participation in MPSO. **Implications:** Participation in MPSO or a similar student organization is an effective way to educate pharmacy students about underserved communities and prepare them to practice among these communities. Participants find their involvement valuable and seek opportunities for employment serving underserved communities.

**Prevalence of Industry Authorship in Major Pharmacy Journals.** Mark A. Gales, Southwestern Oklahoma State University, Betsy A. Poorman, Southwestern Oklahoma State University, Barry J. Gales, Southwestern Oklahoma State University. **Objectives:** To evaluate the frequency of industry-affiliated authorship in major peer-reviewed pharmacotherapy journals over a 10 year period. **Method:** The American Journal of Health-System Pharmacy (AJHP), the Annals of Pharmacotherapy (AP) and Pharmacotherapy (PT) were selected for analysis. All qualifying research and review articles published from January 1998 to December 2007 were reviewed for industry affiliation. **Results:** A total of 3,498 articles with 12,651 authors met inclusion criteria. Industry-affiliated authors accounted for 9.3% of all authors with 67.9% reporting a direct employment relationship with a pharmaceutical or medical device company. For-profit, contract research providers at an Academic Health Sciences Center. **Method:** Data were collected via a 62-item anonymous online survey distributed to medical, pharmacy, and rehabilitative health (RT) students at a large Academic Health Sciences Center. The survey instrument collected demographic information related to the respondent’s healthcare discipline, year(s) in professional program, and if the participant had been diagnosed with a disorder requiring a prescription stimulant medication. Nonmedical prescription stimulant use, motivation for nonmedical use, deceptive practices, frequency of use, consequences of nonmedical use, and peer group nonmedical use were also collected. **Results:** In aggregate, 11.3% of respondents reported misuse of prescription stimulants. The rate of misuse was similar for pharmacy (9.7%) and medicine (10.9%) students with a trend towards an increased rate of misuse in RT students (26.3%) (p = 0.08) The response rates were 70.5% (225/319) for pharmacy, 47.6% (128/269) for medical, and 54.3% (19/33) for respiratory therapy students. The most common reasons for misusing prescription stimulants were to improve academic performance (25/44; 56.7%) and increase alertness/energy (29/44; 65.9%). The most commonly reported adverse reactions were lack of appetite (30/44; 68.2%) and difficulty sleeping (24/44; 54.5%). **Implications:** Given the stigma associated with prescription stimulant misuse, it is difficult to assess the breadth and depth of this problem. Physical and/or psychological dependence, altered clinical judgment, and violation of misconduct policies and laws are possible consequences of prescription stimulant misuse. This is the first survey to assess misuse by multiple disciplines on a single Academic Health Sciences campus.
of 9.7%, 11.4% and 16.9% respectively (p < 0.001). Research articles in all journals were more likely to include industry-affiliated authorship when compared to review articles. Sub-analysis of articles with industry-affiliated authors revealed that 67% of these articles had > 50% of the authors identified as industry-affiliated. Implications: Industry-affiliated authorship accounts for a minority of authors in the pharmacy literature. However, when present they commonly represent a majority of the contributors on an individual publication.

Professional Involvement of UCSD Skaggs School of Pharmacy and Pharmaceutical Sciences Alumni in Immunization Activities. James Colbert, University of California, San Diego, Sarah Lorentz, University of California, San Diego, Seung Abbie Son, University of California, San Diego. Objectives: The UCSD Skaggs School of Pharmacy and Pharmaceutical Sciences (SSPPS) provides an immunization class for first year students. For this study, we hypothesized that the majority of pharmacists involved in administering vaccinations are employed by community pharmacies, would request an additional refresher course during their 3rd year of pharmacy school, and would have had additional training prior to immunizing at their workplace. The SSPPS alumni survey study explored: 1) immunization activity in their practice areas 2) reasons for immunizing patients, 3) obstacles to immunization services, 4) additional employer required training, and 5) need for refresher immunization training prior to graduation. Method: The survey was launched online using Survey Monkey and distributed via e-mail from January 2011 thru February 2011 only to the 195 alumni who are graduates of SSPPS (encompassing graduations from 2006-2010). Excluded from the study are current SSPPS students and graduates from other pharmacy schools. Statistical analyses were conducted using Stata with a significance level at p ≤ 0.05. Results: A total of 56 respondents (28.7%) participated in the survey. Since graduation from SSPPS, 41.8% (n = 23) of alumni are involved in administering immunizations mostly at community pharmacies (n = 17, 73.9%). Our study found that the majority of the survey respondents (58.5%) suggested that the APhA immunization certification course be the standard for training pharmacists. Implications: Schools of pharmacy have an excellent opportunity to provide early training for student-pharmacists in the delivery of immunizations. The majority of respondents agreed that having additional immunization training programs would enhance their ability to provide immunizations.

Pursuing Additional Pharmacy Education Among Practicing Pharmacists in the Republic of Trinidad and Tobago. Diane N. Ignacio, Rian M. Extavour, Pamela Townsend, Roy T. Dobson, University of Saskatchewan. Objectives: To report on the perception of licensed pharmacists in the Republic of Trinidad and Tobago (RTT) regarding the potential benefits of pursuing additional formal education, and also factors that would affect the decision to obtain additional education. Method: A cross-sectional census survey of registered pharmacists in the RTT in July 2012 using a paper questionnaire. An introductory letter was sent to registered pharmacists in the RTT, followed one week later by the questionnaire, a cover letter and a pre-stamped return envelope. A reminder was mailed two weeks later and data collection ended two weeks after the mail reminder was sent out. Results: A total of 144 questionnaires were completed and returned for a response rate of 24 percent. Two-thirds of degree pharmacists were interested in obtaining either a Pharm.D. or a graduate degree. Approximately one-quarter of diploma pharmacists indicated wanting to obtain a bachelor of pharmacy degree. The benefits of wanting additional pharmacy education that rated highest were, not wanting to remain with current knowledge, improving clinical and research skills, and providing pharmaceutical care. Other factors considered most important in obtaining additional pharmacy education were flexibility of work schedule, times when classes were held during the day, amount of time required to complete the program, and ability to meet family obligations. Implications: A large proportion of registered pharmacists in RTT, particularly those with a pharmacy degree are interested in obtaining additional university-level education.

Question to Drug Information Consult in 3 Stages: Building P2 Research and Evaluation Skills. Deborah A. Wittman, Touro College of Pharmacy-New York, Craig A. Kovera, Touro College of Pharmacy-New York. Objectives: Pharmacy students need to be well equipped with skills to research and evaluate literature so they can effectively apply evidence-based medicine (EBM) in practice. To better prepare them, a unique 3-stage approach to writing a drug information consult (3sDIC) was incorporated into a Pharmacy Practice course. The objectives were to document the development process for the assignment, and to examine future feasibility. Method: 90 students were given essential information about a patient in a hospital or clinic setting. In Stage 1, the course of events in obtaining additional pharmacy education were flexibility of work schedule, times when classes were held during the day, amount of time required to complete the program, and ability to meet family obligations. Implications: A large proportion of registered pharmacists in RTT, particularly those with a pharmacy degree are interested in obtaining additional university-level education.

Reevaluation of a Scholarship Committee’s Ability to Foster Scholarly Growth of Pharmacy Practice Faculty. Brian Cryder, Midwestern University/Downers Grove, Sally Arif, Midwestern University, Ana C. Quinones-Boex, Midwestern University, Nicole Rockey, Midwestern University, Justin Schmidt, Midwestern University, Chicago College of Pharmacy, Christie Schumacher, Midwestern University, Chicago College of Pharmacy, Rosalyn Vellurattil, Chicago State University. Objectives: To evaluate the impact of a pharmacy practice scholarship committee and change in faculty perception since initial evaluation in 2004. Method: A questionnaire was distributed in June 2011 to pharmacy practice faculty (N = 44) to assess: 1) participation in events, 2) barriers which prevented participation, 3) perceived importance and achievement of committee goals, 4) satisfaction with committee’s programming formats, and 5) perceived change in attitudes and interests toward scholarly activity as a result of programming. Open ended, rank order and five point Likert-type scale questions were utilized for evaluation. Results: Twenty-seven faculty completed the questionnaire, and nineteen reported attendance to at least one recent program. The consensus barrier to participation was schedule conflicts with other faculty responsibilities (92%). A majority of respondents thought the committee goals were important and of the 63% who felt able to evaluate the committee, most were satisfied with goal achievement. Most faculty agreed that their attitudes toward scholarship and scholarly activity have improved as a result of committee programming (88%). However, compared to prior evaluation in 2004, responding faculty were less likely to agree that the scholarship

78
Role of Advanced Pharmacy Practice Experiences in Students’ Perceptions of Preparedness to Evaluate Primary Literature.

Kathryn M. Momary, Mercer University, Lisa M. Lundquist, Mercer University. **Objectives:** Assess the change in students’ perceptions of their own preparedness to critically evaluate literature during APPEs and after advanced pharmacy practice experiences (APPE). **Method:** Students were asked to voluntarily complete a survey assessing their perception of preparedness to critically evaluate literature in the third professional year and at the end of the fourth professional year. Two graduating classes of students have been assessed. Students were asked to rate the adequacy of their preparedness on a 4-point Likert scale with 1 = extremely unprepared, 2 = unprepared, 3 = prepared, and 4 = extremely prepared. In addition, quantitative and qualitative data regarding critical literature evaluation (CLE) experiences during APPE were collected (number of opportunities to critically evaluate literature, which APPE provided the opportunity). Students’ perceptions of preparedness before and after APPEs were compared with descriptive statistics and paired t-tests. Descriptive statistics were used to report data regarding CLE experiences during APPE. **Results:** One hundred forty-two (50%) students consented for participation. The perception of preparedness mean ± SD increased significantly from 2.2 ± 0.5 pre-APPE to 3.0 ± 0.4 post-APPE (p < 0.001). One hundred twenty-seven students reported the opportunity to critically evaluate literature a total of 272 times during APPE. The majority of CLE occurred during acute care APPEs. In addition, students that felt more prepared in evaluating primary literature before and after APPEs were compared with descriptive statistics and paired t-tests. Descriptive statistics were used to report data regarding CLE experiences during APPE. **Implications:** APPE can play an important role in improving students’ ability to critically evaluate primary literature. Since more CLE experiences may be associated with improved student confidence, preceptor development focused on CLE may be needed.

Rx for Change: Dissemination and Implementation of a Shared Tobacco Cessation Curriculum for Pharmacy Schools.

Karen S. Hudmon, Purdue University, Robin L. Corelli, University of California at San Francisco, Lisa Kroon, University of California at San Francisco. **Objectives:** To disseminate Rx for Change, a shared tobacco cessation curriculum, to U.S. schools of pharmacy. **Method:** Five train-the-trainer workshops were conducted over a period of three years (n = 191 faculty trained, representing 98% of schools). Faculty then were responsible for incorporating the Rx for Change content into their existing curricula. Three years of annual assessments characterized implementation of the curriculum modules. **Results:** A total of 69 of 85 schools (81%) implemented Rx for Change in the academic year following attendance at a train-the-trainer program. Just over one third of implementations occurred in the 3rd professional year, 30% in the 2nd year, 21% in the 1st year, 11% across multiple years, and the remainder in the 4th or 5th professional year. Across 197 implementations, 20,601 students were trained, and 90% of schools integrated the materials into the required curriculum. Most (82%) included hands-on training with pharmaceutical agents, and 79% incorporated role playing. The median number of minutes taught in the required curriculum was 360, and faculty’s self-rated ability to teach tobacco cessation to their students increased as a result of their participation in the Rx for Change project (p < 0.0001). In the third and final annual survey, 93% of faculty reported that they anticipated implementing Rx for Change in the upcoming academic year, and they estimated teaching a median of 360 min of tobacco cessation content. **Implications:** A shared curriculum with train-the-trainer workshops is an effective approach for increasing the quantity of tobacco education in required curricula.
plan has grown from 72 to 576 during the same time. In last year’s class alone, 21 students worked with 5 course faculty members resulting in 9 poster and 3 podium presentations at national/international meetings, 3 posters (and awards) at a University Research Day, and the preparation of 8 manuscripts. Implications: This reproducible model can be implemented by faculty at institutions looking to efficiently and effectively achieve high-yielding results in each of the three areas of teaching, research, and service.

Self-Perceived Teaching Abilities Before and After Completion of a Postgraduate Teaching Certificate Program. Ashley Castleberry, Nalin Payakachat, University of Arkansas for Medical Sciences, Kathryn K. Neill, University of Arkansas for Medical Sciences, Amy M. Franks, University of Arkansas for Medical Sciences. Objectives: To assess the effectiveness of a one-year postgraduate Teaching Certificate Program on the development of self-perceived teaching abilities. Method: Participants characterized self-perceived teaching abilities at the beginning and end of a one-year Teaching Certificate Program using a 33-item questionnaire with Likert scale responses (1 = very poor, 2 = poor, 3 = barely acceptable, 4 = good, 5 = very good). Items represented 4 teaching-related domains (teaching [17 items], practice [10 items], assessment [4 items], and feedback [2 items]). Changes in self-perceived teaching abilities were compared using pre- and post-program summary scores (max score = 165) and average domain scores using paired t-tests. Results: Forty-four participants completed pre- and post-program questionnaires during three program years. The mean post-program summary score increased by 20.3% compared to baseline (111.9 ± 13.7 vs. 145.4 ± 7.9, p < 0.001). Each average domain Likert score also increased significantly (p < 0.001): teaching (3.2 ± 0.5 vs. 4.3 ± 0.2), practice (3.7 ± 0.5 vs. 4.5 ± 0.3), assessment (3.3 ± 0.6 vs. 4.3 ± 0.4), and feedback (3.4 ± 0.7 vs. 4.5 ± 0.5). Implications: Participation in the postgraduate Teaching Certificate Program results in improvements in self-perceived teaching abilities among all 4 teaching-related domains. Such development in teaching abilities is valued by colleges and schools of pharmacy in faculty recruitment. Implementation of similar programs is beneficial to participants seeking employment in a competitive workforce as well as institutions looking to recruit educators with quality teaching experience.

Self-testing Improves Exam Scores Regardless of Self-testing Average. Jim Thigpen, East Tennessee State University, Peter C. Panus, East Tennessee State University, Nicholas Hagemeier, East Tennessee State University, Lauren K. Brooks, East Tennessee State University, David W. Stewart, East Tennessee State University. Objectives: To determine if there is a relationship between the number of self-testing attempts and subsequent exam grade in a pharmacy course. Method: A total of 1,342 multiple choice questions were developed for pharmacy students to self-test for a pathophysiology course. Prior to each examination, students were allowed to take online quizzes which were randomly generated and related to the exam content. Quizzes were scored immediately, and students were shown the incorrect questions along with all answer choices. A matrix of intercorrelations and repeated measures ANOVA, with post hoc tests, was generated using PASW Statistics Version 19 (IBM, Armonk, NY) to evaluate all variables. Results: 77 of 79 students (97.5%) participated, resulting in a total of 7,042 attempts. Non-participants were assigned a zero. There were variations in both the average practice attempts (18 – 30) and subsequent exam grade (82 – 90) on the 4 exams. However, a significant correlation (p ≤ 0.05) existed between number of attempts and each exam grade (R = 0.478, 0.426, 0.385, and 0.218). For each exam, students were stratified into the upper and lower 50%, according to the number of self-testing attempts. On all four exams the lower 50%, based solely on attempts, scored significantly lower (p ≤ 0.05) on the subsequent exam based on a two group T-test. Implications: Although self-testing strategies increase recall ability, this strategy is uncommon in pharmacy education. These results suggest that the number of self-testing attempts improves subsequent exam grade, regardless of the score for the self tests.

Simulated Pharmacist-patient Encounters as Part of an Ambulatory Care Elective Course. Diana Isaacs, Chicago State University, Baljit Singh, Chicago State University, Marianne Shenuoda, Chicago State University. Objectives: To assess the impact of simulated pharmacist-patient encounters on students’ ability to make therapy decisions in ambulatory patients. Secondary objectives include assessing the impact on students’ empathy and patient counseling skills. Method: 26 students enrolled in the ambulatory care elective course in fall, 2011. Students were randomly selected to simulate a patient with multiple chronic disease states including diabetes. The simulation occurred over 2 weeks with all students playing the role of the patient for 1 week and the role of the pharmacist for 1 week. Pharmacists interviewed the patient, made therapeutic recommendations, and wrote a detailed SOAP note. Patients wrote a reflection on their experience. Students also completed an optional survey about the course utilizing a 5 point likert scale. Results: 25 students completed the survey. 23 students agreed that the course enhanced their ability to adjust and monitor medication regimens in ambulatory patients. 22 students agreed that the course enhanced their ability to justify and rationalize therapy decisions in ambulatory patients. After completing the simulation, 25 students had greater empathy for patients with diabetes and 22 students could more effectively counsel patients with diabetes. Through their reflections, the students expressed a greater sense of empathy for patients with multiple chronic disease states. Implications: Making therapy decisions and counseling patients are important tools for pharmacists working in ambulatory care. Since ambulatory care is a required advanced pharmacy practice for colleges of pharmacy as determined by ACPE, simulated pharmacist-patient encounters can be a useful exercise for students.

Sleep Quality Among Pharmacy Students. Marshall E. Cates, Samford University, Andraya C. Phillips, Ireland Army Hospital, Thomas W. Woolley, Samford University Brock School of Business. Objectives: To determine the quality of sleep among pharmacy students in the didactic portion of the curriculum at one school of pharmacy. Method: The study was an anonymous, voluntary survey of pharmacy students in the first-, second-, and third-year classes. The survey included the Pittsburgh Sleep Quality Index (PSQI), which is a self-rated instrument that measures sleep habits during the past month. Higher scores on the PSQI indicate poorer sleep quality. Results: The survey was completed by 253 of 375 (67%) students. Sleep duration scores were higher for males vs. females (p = 0.031) and lower for third-year students vs. first- and second-year students (p = 0.000). Compared to students with higher GPAs, students with GPAs of 2.00-2.99 had higher scores on sleep efficiency (p = 0.025), use of sleep medication (p = 0.023), daytime dysfunction (p = 0.051), and global score (p = 0.002). Poor sleep quality, which was indicated by a global PSQI score > 5, was reported in 140 (55%) students. The rate of poor sleepers was higher among students with GPAs of 2.00-2.99 (75%) vs. students with GPAs of 3.00-3.49 (46%) or 3.50-4.00 (56%) (p = 0.004). Implications: Poor sleep quality is pervasive among pharmacy students in the didactic portion of the pharmacy school curriculum, but especially among students with lower GPAs. This study points to the need for further evaluation of pharmacy students’ sleep habits as well as the need for strategies to address poor sleep quality among pharmacy students.
Social Media Use in a Pediatric Pharmacotherapy Elective Course. Gary Milavetz, The University of Iowa, Marwa M. Ithman, The University of Iowa, Andrew Spurgin, The University of Iowa, Susan S. Vos, The University of Iowa. Objectives: Social media allows users to keep abreast of current events and discoveries, quickly disseminate useful findings and allow for the creation of user-generated commentary. However, there is little data available describing the use of social media in a pharmacy course. The objective of our project is to describe and assess the utilization of social media in a pediatric pharmacotherapy course. Method: Students were given a pre-course survey to assess their interest level and use of various social media websites. A closed Facebook® group was created for all members of the class and guidelines were established for posting to the group. Participation in the Facebook® group was optional. All members had the ability to post new information, ask questions and comment on prior posts. A post-course survey was given to assess student use and overall impressions. Results: All 14 students enrolled in the class completed the pre-course survey and indicated an overwhelming interest in participation. Thirteen completed the post-course survey. Forty-seven news items and 60 comments were posted during the 15-week class. Students made the majority of posts. All students agreed the Facebook® group should continue to be part of the class and 77% agreed it enhanced their educational experience. Implications: The utilization of a social media site in the pediatrics pharmacotherapy elective course enhanced the educational experience of students. The type of social media employed, posting requirements, and the ability to choose to opt out without negative consequences are important for the successful implementation of social media in pharmacy education.

Student Approaches to Multiple Choice Examinations and the Relationship Between Completion Time and Scores Earned. Lana Dvorkin-Camiel, Massachusetts College of Pharmacy and Health Sciences-Boston, Jennifer Goldman-Levine, Massachusetts College of Pharmacy and Health Sciences-Boston. Objectives: To identify and evaluate students’ approaches to multiple choice examinations and scantron completion and to determine if there is a difference between exam scores based on completion and submission time. Method: Students completed a survey evaluating examination taking approaches following a 60-minute, 40-question multiple choice examination in a required Over-the-Counter Drugs/Self-Care course. Exam scores were averaged according to the time the scantrons were submitted. Results: Ten percent of students submitted exams between 0-30 minutes, 22% between 31-40 minutes, 37% between 41-50 minutes and 31% between 51-60 minutes of the initiation. There was no difference between grade averages: 90.14%; 91.58%, 90.97%, and 91.09% respectively. Thirty-three percent of students did not change answers to any questions (33%) or changed 1 or 2 answers (27%, 21%). Students completing the exam within 30 minutes preferred not to change answers (31%), not to linger (10%), or did this to minimize anxiety and stress (12%). Students spending more than 30 minutes, needed more time but were confident (54%), finished quickly but preferred to review (31%), or were not confident in the material (11%). Forty-one percent moved through the exam questions, answered easy questions first (38%), or reviewed the exam multiple times (40%). Fifty-seven percent completed scantrons as they moved through the exam, while 33% completed scantrons at the end. Implications: Students gave various reasons for turning in their exams early versus later. Neither the time of completion and submission of their exams nor the methodology for examination-taking impacted their scores.

Student Success Tracking Pilot Program. Jane M. Souza, St. John Fisher College, Richard O’Brocta, St. John Fisher College. Objectives: The purpose of study is to pilot a program in which all P1 students input their exam grades for each course in the fall semester into E*Value. Alongside their grades they record reflections on their performance. This information, visible only to the individual students and their advisors, is used to promote meaningful dialog during advising sessions. Method: A form was created in E*Value for students to input their exam grades and reflections on those grades. Faculty advisors were asked to use this data during advising sessions. Feedback was collected through Qualtrics surveys for faculty and students as well as from a personal meeting with the P1 students. Data from the surveys and meeting were used to evaluate the program. Results: 100% of students recorded exam grades; 94% of students recorded reflections. Faculty survey results (77% response rate) indicate that 90% used the program data to offer advice to students. On a scale of 1-5 with 5 being extremely valuable, faculty rated the program value with a mean score was 3.54, 68% of students responded to the survey and when rating the program as part of their advising session, they rated it 3.11 on a scale of 1-5. During a meeting with the students, they requested automation of grade input. Implications: Program implementation would enable faculty to offer more specific recommendations to students during their advising sessions. It would provide students a personal record to track their success across courses and years.

Student Time Allocation Practices vs Academic Outcomes for Students From A Two Campus Pharmacy School. Heather B. Congdon, University of Maryland, Jill A. Morgan, University of Maryland, Lisa Lebovitz, University of Maryland. Objectives: To determine the impact of variable time allocation during P1-P3 years on cumulative grade point average (C-GPA), APPE scores, and NAPLEX scores.

Student Pharmacists’ Perspectives on E-Professionalism. Genevieve L. Ness, Purdue University, Amy H. Sheehan, Purdue University, Margie Snyder, Purdue University, Jacob P. Gettig, Midwestern University College of Pharmacy-Chicago, Joseph Jordan, Butler University, Jean E. Cunningham, The University of Findlay. Objectives: The purpose of this study is to examine 1) use patterns of social media among pharmacy students completing their advanced pharmacy practice experiences (APPE), 2) students’ views and opinions of professionalism on popular social media sites, and 3) the potential relationship between behavior on social media sites and seeking employment. Method: A previously published survey instrument assessing students’ attitudes regarding professionalism while utilizing social media was adapted for use in this study. All graduating student pharmacists (n = 516) at Purdue University, University of Findlay, Butler University, and Midwestern University were invited to complete the survey instrument during the fall semester of 2011, prior to the American Society of Health-System Pharmacists Midyear Clinical Meeting. Results: A total of 212 students participated in the survey yielding a 41.08% response rate. Seventy-four percent (120/162) of students felt they should edit their social media profiles prior to applying for a job and 32% (52/162) of students who reported current use of social media planned on editing their social media profiles prior to the ASHP Midyear Clinical Meeting or career fair. Implications: The majority of student pharmacists responding to this survey recognized the importance of maintaining a professional image on social media sites prior to seeking employment. The addition of an educational session informing students of the dangers of using social media and ensuring students are properly utilizing the privacy settings may be beneficial to prepare students to present themselves as a professional on their social media profiles.
for students from two separate campuses. **Method:** P1-P3 PharmD students complete an annual online survey about the student experience. Questions include weekly time allocation (attending class, watching lectures online, etc.) categorized as 0-5 hours, 6-10 hours, 11-20 hours, 21-30 hours and >30 hours, and identifiers of class year and campus cohort. Class of 2011 survey data were analyzed and compared by campus for NAPLEX scores, C-GPA and APPE grades. NAPLEX scores were obtained through voluntary release from students. Academic data was obtained from Banner enrollment management system. **Results:** Time spent in class was significantly higher at the main campus (UM) (p < 0.0001, p = 0.0001, p = 0.0002 for P1-P3 respectively). Time spent watching online lectures was significantly higher at the distance campus (SG) (p < 0.001, p = 0.0026 for P1 and P3 respectively). Academic data was available for 114 UM and 33 SG students. C-GPA scores were 3.46 ± 0.3 and 3.35 ± 0.3 on a 4-point scale for UM and SG respectively (p = 0.06). APPE scores were 3.85 ± 0.21 and 3.83 ± 0.25 for UM and SG respectively (p = 0.8). 64 UM and 18 SG students released their NAPLEX scores and were matched to their assigned campus. The average NAPLEX scores of the 82 students who released their scores were 116 ± 7 for UM and 114 ± 6 for SG (p = 0.31). **Implications:** Although students at each campus allocated their time differently during P1-P3 years, similar outcomes were achieved for C-GPA, APPE and NAPLEX scores.

**Student Pharmacist Experience with Online Learning and Academic Performance.** Jana Sterling, *The University of Tennessee*, Alexander B. Guirguis, *The University of Tennessee*, Katie J. Suda, *The University of Tennessee*. **Objectives:** While technology has emerged into higher education, graduate education has been slower to adapt. The objective of this study was to evaluate student pharmacist experience and academic performance in the first offering of a literature evaluation course with online lectures in the pharmacy curriculum. **Method:** An anonymous online survey was administered to third-year student pharmacists near semester completion. Exam scores from the new course approach were compared with the traditional offering the previous year. Chi-Squared and t-test were used for statistical analysis; p < 0.05 was considered significant. **Results:** There was a 98% survey response rate (40% Knoxville, 60% Memphis). Student demographics did not differ by campus (p = NS). 53% completed an online course as undergraduates; of these 22% were science courses. In the pharmacy curriculum, students preferred viewing lectures online using Mediasite software (44.8%) or had no preference (16.8%), but 38.5% preferred traditional lectures. With online lectures, most students viewed lectures on time (course statistics = 77.9%; self-reported = 71.3%). Compared to the previous year, there was no difference in midterm exam scores, but students enrolled in the new course scored significantly higher on the final (p < 0.0001). Students reported that nothing was missed with online lectures (37.8%), but 28.7% stated that live lectures force them to keep up with course material and 18.9% felt that online lectures were less engaging. **Implications:** A course with online lectures was well accepted by students with no adverse impact on exam grades. However, student timeliness viewing online lectures prior to deadlines could be improved.

**Students’ Ability to Work Effectively in a Patient Care Setting: Student vs. Health Care Provider Perceptions.** Leisa L. Marshall, *Mercer University*, Diane L. Nykamp, *Mercer University*. **Objectives:** To compare perceptions of health care providers (HCPs) and pharmacy students regarding students’ ability to work effectively as a team member in a patient care setting during an Advanced Pharmacy Practice Experience (APPE). **Method:** A 22 item questionnaire was completed by HCPs, other than the faculty preceptor, and students at the conclusion of an Ambulatory or Continuous care APPE. Both HCPs and students rated the student’s ability (four point Likert scale) to deliver patient care and work effectively. Six proficiency areas listed in the standardized APPE grade evaluation were rated: 1. Drug monitoring, 2. Communication, 3. Self Directedness, 4. Social interaction, 5. Professionalism, and 6. Organization. Additionally, HCPs were asked about student attitudes, ability to apply didactic knowledge to patient care, and amount of supervision required. Student self-ratings were anonymous. **Results:** Twenty five students (96% response) and 45 HCP (90% response) questionnaires were obtained from August 2010- Nov 2011. Students, ages 23-34, had a GPA range of 3.2 to 3.97, and at least 2.5 years of pharmacy work experience. Mean responses from HCPs and students ranged from agree to strongly agree (3.35 - 3.92/4) on the 6 APPE proficiency areas. HCPs reported that students had excellent to good attitudes, required minimal supervision, and were good at applying classroom knowledge to patient care. Statistical analysis comparing perceptions of HCPs and students showed significant differences in two proficiencies, Social Interactions and Professionalism. **Implications:** In most instances, both students and HCPs agreed that students work effectively in the patient care setting.

**Students’ Perception of Peer Mentoring on Drug Information Responses.** Jennifer L. Rodis, *The Ohio State University*, Maria C. Pruchnicki, *The Ohio State University*, Brittany M. Schmidt, *The Ohio State University*, Jennifer L. Backo, *The Ohio State University*. **Objectives:** Assess the impact of peer mentoring on students’ perception of ability to compose drug information (DI) responses in Doctor of Pharmacy curriculum. **Method:** A faculty-mediated peer mentoring program was implemented in a first year (P1) drug information course. Second year student volunteers (P2s) participated as mentors to P1s as a strategy to improve the quality of an assigned drug information project. P2s received training prior to reviewing responses and were responsible for written feedback using a standardized rubric. Each student mentored 4-8 P1 students. Feedback on roles and benefits from both student cohorts was solicited using online surveys. Perceptions on value and impact of the project were quantified using a 5-point Likert scale; open-ended reflective responses were also collected. **Results:** Data from four years (2008-2011) was included. 76% of P1s (n = 459) agreed or strongly agreed that having a P2 mentor improved their ability to prepare a DI response. All 52 P2s (n = 64) reported their own ability to compose a DI response improved by participation in peer mentoring, and that their review helped P1s prepare a better response. Furthermore, all P2s indicated that they would choose to be involved in this independent study again. Reflective responses of P2s consistently noted difficulty with determining correct citation formats for references. **Implications:** Peer mentoring for a DI response appeared valuable for improving DI skills for students with both prior experience and little/no experience with the assignment. Peer mentoring for other learning activities in the pharmacy curriculum, and/or other skill areas, may benefit student outcomes.

**Student’s Assessment of Whether Report Cards Provide Valuable Feedback on Their Exam Performance.** Paul O. Gubbins, *University of Arkansas for Medical Sciences*, Eric F. Schneider, *University of Waterloo*, Martha H. Carle, *University of Arkansas for Medical Sciences*, Kathryn K. Neill, *University of Arkansas for Medical Sciences*, Kendrea M. Jones, *University of Arkansas for Medical Sciences*, T. Scott Warmack, *University of Arkansas for Medical Sciences*, Seth Heldenbrand, *University of Arkansas for Medical Sciences*. **Objectives:** An electronic exam report card was developed to provide objective feedback after online exams. This study assesses whether students believe it provided valuable feedback on individual exam performance and helped their approach to studying for subsequent exams.

**Students’ Ability to Work Effectively in a Patient Care Setting: Student vs. Health Care Provider Perceptions.** Leisa L. Marshall, *Mercer University*, Diane L. Nykamp, *Mercer University*. **Objectives:** To compare perceptions of health care providers (HCPs) and pharmacy students regarding students’ ability to work effectively as a team member in a patient care setting during an Advanced Pharmacy Practice Experience (APPE). **Method:** A 22 item questionnaire was completed by HCPs, other than the faculty preceptor, and students at the conclusion of an Ambulatory or Continuous care APPE. Both HCPs and students rated the student’s ability (four point Likert scale) to deliver patient care and work effectively. Six proficiency areas listed in the standardized APPE grade evaluation were rated: 1. Drug monitoring, 2. Communication, 3. Self Directedness, 4. Social interaction, 5. Professionalism, and 6. Organization. Additionally, HCPs were asked about student attitudes, ability to apply didactic knowledge to patient care, and amount of supervision required. Student self-ratings were anonymous. **Results:** Twenty five students (96% response) and 45 HCP (90% response) questionnaires were obtained from August 2010- Nov 2011. Students, ages 23-34, had a GPA range of 3.2 to 3.97, and at least 2.5 years of pharmacy work experience. Mean responses from HCPs and students ranged from agree to strongly agree (3.35 - 3.92/4) on the 6 APPE proficiency areas. HCPs reported that students had excellent to good attitudes, required minimal supervision, and were good at applying classroom knowledge to patient care. Statistical analysis comparing perceptions of HCPs and students showed significant differences in two proficiencies, Social Interactions and Professionalism. **Implications:** In most instances, both students and HCPs agreed that students work effectively in the patient care setting.
email to the Assistant Deans of Academic Affairs at Colleges of Pharmacy throughout the United States. An initial email and instructions to complete the survey was sent followed by a reminder email every 5 days until the survey was closed. **Results:** There were a total of 30 completed surveys. Twelve (40%) schools surveyed offered only course remediation, 3 (10%) offered only exam remediation, 9 (30%) offered both course and exam remediation, and 6 (20%) were in the process of remediation development. The most common strategies for course remediation were reviews (91%), tutoring (86%), and additional out-of-class assignments and activities (32%). Sixty percent of programs felt that their course remediation strategies were effective, most with a success rate of >70%. The most common formats for exam remediation were written multiple choice (27%), written multiple choice and short answer (36%), and a combination of oral and written (18%). Seven (70%) of programs felt their exam remediation strategies were successful. **Implications:** Based on preliminary data, remediation strategies such as tutoring and reviews may be effective at improving student progression.

**Teaching Problem-Solving in a Self-Care Lab: A Skills Based Approach.** Catherine Cone, *The University of New Mexico. Objectives: 1. To develop student skills to problem-solve patient care needs in a care lab setting. 2. To measure the success of these skills and curricular changes. Method: This care lab was designed to parallel concurrent topics in self-care therapeutics. The new curricula focused on strengthening student problem-solving skills using SOAP note writing and evidenced-based medicine (EBM), including patient counseling, interviewing, medication use and physical assessment. Rubrics were developed to evaluate these skills through the use of an Observed Simulated Clinical Evaluation (OSCE), using standardized patients. Teaching evaluations and anonymous student feedback were evaluated on a 6-point scale (1 = lowest to 6 = highest) before and after the changes were made and tested using a two-sided t-test. Results: Faculty feedback on the changes to content and teaching technique showed significant improvement (p-value < 0.01 and 0.03, respectively). Student comparisons for “rate the course” (mean change from 3.3 to 5.6), “rate the content” (3.8 to 5.5), and “rate the instructor” (3.6 to 5.8), significantly improved as well (p < 0.01 each). Written student and faculty feedback on the OSCE was positive. Implications: Teaching an approach to pharmacist led self-care that centers on learning problem-solving skills using SOAP notes and incorporating EBM was successful. The rubrics and the OSCE format provided an opportunity for students to show what they had learned and for faculty to assess it using a holistic approach that while simulated, was realistic.

**Test-Retest of a Novel Peer Evaluation System: CCLAP On or CCLAP Off** Natalya Shinkazh, *Touro College of Pharmacy-New York, Craig A. Kovera, Touro College of Pharmacy-New York. Objectives: Limited research exists regarding the reliability of peer-to-peer evaluations (PEP’s) to provide consistent feedback, though such a feature is vital for informing continuous improvement over time. In this study, students twice-completed a newly developed PEP (CCLAP) or an older PEP (POWS) with regard to the following objectives: 1) Compare the two PEPs for overall test-retest reliability; 2) Compare variations in students’ individual score assignments for each PEP. Method: After finishing a team project in Therapeutics, student teams were randomly assigned one of two PEP’s (Round 1), where POWS served as the control since it was used previously in courses. Four to six weeks later, the respective teams filled out the same PEP for the same completed project to test for reliability (Round 2). A difference of means test was calculated for Round 1 and 2 responses, then compared between PEPs. We also examined variability in students’ scores.
for individual team members. Results: Of the students who completed Round 1, 29/31 students completed CCLAP and 24/31 students completed POWS in Round 2. The difference of means between each Round were -0.07 and 0.1 (P = 0.001) CCLAP and POWS respectively. Results for variability are also significant and will be presented at the meeting. Implications: The novel CCLAP demonstrated superior reliability and reduced variability between student responses. Implementing PEP’s with high reliability and low variability into Doctorate of Pharmacy curricula assures constructive feedback and may provide excellent insight to both students and faculty regarding student performance in group projects.

The Effect of Gender or Course Grade on Course Evaluation Completion Rates. Catherine L. Hatfield, University of Houston, Elizabeth A. Coyle, University of Houston, Gerida Brown, University of Houston. Objectives: The objective was to determine whether there was a correlation between a student’s course grade or their gender and their decision to complete the course evaluation. Method: Several high credit hour courses (4-5 SCR) were chosen for analysis due to their large grade distributions. The data was collected from PeopleSoft® and CourseEval® and analyzed for relationships between gender or course grade on course evaluation completion rates. Results: Course evaluation completion rates ranged from 12.6% to 46.9% for Pharmacology 1&2 and Advanced Therapeutics 1&2 courses. A comparison of the grades of the students who completed the course evaluations to those that did not complete the course evaluations, a significant difference was found only for the Pharmacology 1 course. However, this course also happened have the lowest overall completion rate. After considering course gender distribution, females were generally more likely to complete course evaluations. Implications: With low response rates for course evaluations, it is beneficial to know that the completion of these course evaluations do not seem to be related to the course grades. Gender differences in the completion of course evaluations, as well as other demographic factors, will need to be further analyzed to determine if there are correlations throughout the curriculum.

The First Semester Experience and its Effects on Pre-Pharmacy Students’ Connection, Retention, and Success. Daniel J. Hansen, South Dakota State University, Gregory A. Heiberger, South Dakota State University, Ashley Losing. Objectives: Evaluate the impact of a peer mentor program on pre-pharmacy students taking an introductory pre-pharmacy course in their first semester of college. Method: Introduction to Pharmacy is a first year seminar course designed to introduce pre-pharmacy students to careers in pharmacy and help them as they transition to college. In Fall 2011, two sections of the course with similar incoming characteristics (age, HS GPA, ACT) were used to compare the effects of peer mentoring. To measure the affect of a peer mentoring program, pre-pharmacy students in one section of the course were paired with P2 students. The peer mentors were required to attend four one-hour lectures and lead a small group discussion, meet with students one-on-one at least one time outside of class, and attend one co-curricular activity with the students. The pre-pharmacy students completed a survey at the beginning and end of the course to evaluate the impact of this program (Likert scale 1-5). Results: The peer mentor group showed a significant improvement in their comfort level in using campus resources; they showed a significant decrease in their decision to remain a pre-pharmacy student. The control group showed a significant improvement their knowledge of the pharmacy profession. Implications: A longitudinal study is needed to determine the full effect of a peer mentoring program on retention and the ability to introduce students to the University, College, and the profession.

Research comparing multiple levels of involvement by peer mentors should be conducted to determine a peak return on investment of this intervention.

The Impact of Portable Tablet Technology in a Pharmacy Practice Laboratory. William Maidhof, St. John’s University, Marc Gillespie, St. John’s University, Chung Lee, North Shore University Hospital. Objectives: To determine if portable, web-ready technology such as a tablet enhances patient counseling methods during mock counseling sessions. Method: Second professional year students (n = 27) enrolled in the respiratory section of a pharmacy practice laboratory were randomly assigned either to a tablet or control group. Both groups were given access to identical drug information resources and a therapeutics textbook; the control group used a desktop computer, as is standard laboratory practice. During patient counseling, students were allowed to bring the tablet into the counseling room in addition to written notes; the control group was allowed only written notations. IRB-approved surveys were developed and administered following each counseling session: one student and one evaluator. In addition, evaluators completed counseling rubrics assessing product-specific information at the conclusion of the counseling session. A statistical analysis of the results included calculations of the mean, standard deviation, and a student’s t-test. A Pearson analysis was used to determine the type of correlation within the data sets. Results: Students using a tablet were assessed to perform better in information delivery and engagement, as judged by eye contact. Implications: Considering ease of use and portability, a tablet proved to be useful in regards to more accurate information delivered as part of the counseling session, though connection (empathy) to patient and self-assessment of preparedness may have been impacted.

The Relationship of Grade Point Average to National Exam Scores. Jane R. Mort, South Dakota State University, Stacy J. Peters, South Dakota State University, Thaddaus Hellwig, South Dakota State University, Wendy Jensen Bender, South Dakota State University, Debra K. Farver, South Dakota State University, James R. Clem, South Dakota State University. Objectives: Accreditation standards from the American Council for Pharmacy Education state colleges of pharmacy should utilize “nationally standardized assessments” of students to evaluate and inform the curriculum. The question arises as to the relationship of this information to faculty members’ routine evaluation of students via grade point average (GPA). Therefore, the objective of this study was to examine the association of GPA to students’ scores on Pharmacy Curriculum Outcome Assessment (PCOA), Pre-NAPLEX, and NAPLEX. Method: Second year students’ scores on the PCOA (139 students in 2010 and 2011), fourth year students’ scores on the Pre-NAPLEX (69 students in December 2011), and graduates’ scores on the NAPLEX (64 students in the second trimester of 2011) were compared to the students’ pharmacy course GPA. Results: Grade point average had the strongest association to NAPLEX scores (r = 0.66), specifically the therapeutics course GPA (r = 0.69). Among the three NAPLEX areas, Area 1 had the greatest association with GPA (r = 0.67) while Area 3 had no association (r = 0.16). This is somewhat expected given the much larger number of credits focused on Area 1. Grade point average had a moderate association with PCOA scores (r = 0.50) and the weakest relationship was found between GPA and Pre-NAPLEX scores (r = 0.43). All correlation values were significant (p < 0.001) except for the correlation for Area 3 (p = 0.2). Implications: The modest association between GPA and national exams results suggest other factors influence student performance and supports the use of both GPA and exams to inform the curriculum and individual student.
The Impact of Hybrid Learning Introductory Module on Learning Outcomes in an Antimicrobials Therapeutics Course. Steven N. Leonard, Northeastern University, Kendrick Murphy, Northeastern University, Maryam Zaeem, Northeastern University, Margarita V. DiVall, Northeastern University. Objectives: We aimed to determine if an introductory review module utilizing a hybrid learning approach helped students learn infectious disease management in an antimicrobials therapeutics course Method: A new introductory module consisting of an online pharmacology review, pre-class assignment, 2 didactic lectures, and 1 case based lecture was developed in an antimicrobials course. Pre/post-tests were administered via clickers on day 1 of class and at the end of the module and assessed 4 objectives (explain mechanism of action and identify side effects, drug interactions, and spectrum of activity of common antimicrobials). Questions on the pre- and post-test and all course assessments were linked to the objectives of the module and learning outcomes were examined. Student performance on pre- and post-tests was compared using paired t-test and chi square test. Students completed an evaluation of the introductory module. Results: Results for pre/post-test were available for 110 students (82%). Average total score increased from 71% to 83% (p < 0.0001). Performance on knowledge-based question improved for all but 2 out of 10 questions (p < 0.05). Student confidence for 4 objectives assessed by the pre/post-test increased from the first lecture to completion of the module (p < 0.0001 for all comparisons). Module evaluation was completed by 129 students (96%). 76% strongly agreed and 22% agreed that the introductory module was essential for their success in the course. Item analyses from 2 quizzes and exams confirmed that students learned this material. Implications: Hybrid learning approach was successful in attaining student learning and course success.

The Use of High-fidelity Simulation for the Education of ACLS in a Pharmacy Curriculum. Lindsay E. Davis, Midwestern University’s College of Pharmacy-Glendale, Jeff Barletta, Midwestern University’s College of Pharmacy-Glendale, Tara Storjohann, Midwestern University’s College of Pharmacy-Glendale, Jacqueline J. Spiegel, Midwestern University’s College of Pharmacy-Glendale, Kellie Beiber, Banner Baywood Medical Center. Objectives: To determine the teaching technique associated with the greatest improvement from baseline in advanced cardiac life support (ACLS) knowledge and highest degree of student satisfaction. Method: This prospective, randomized, cross-over trial randomized students into two groups which differed by the sequence of teaching technique delivered (i.e., classroom lecture vs. simulation exercise) for ACLS instruction. A written exam was administered at baseline and after each teaching technique. Four comparative groups were used for data analysis: lecture only, simulation only, lecture followed by simulation exercise, simulation exercise followed by lecture. Results: This study included 135 students (lecture first, n = 66; simulation first, n = 69). Test scores improved significantly from baseline in all groups but was highest when lecture was followed by simulation (Absolute increase from baseline: lecture only = 38%; simulation only = 32%; lecture then simulation = 43%; simulation then lecture = 41%; p = 0.003). Students felt equally comfortable with drug knowledge following both techniques [simulation, 68% vs. lecture, 67%, p = 0.795] but a greater number of students felt more confident with ACLS skills following the simulation exercise versus the lecture [69% vs. 53%, p = 0.009]. Simulation was associated with a greater degree of overall satisfaction [79% vs. 67%, p=0.028]. Implications: Simulation alone will not lead to higher exam scores versus a classroom lecture but will elicit a greater degree of confidence with ACLS skills and satisfaction. The preferred method for training pharmacy students is a lecture coupled with a simulation exercise. College curricula should strongly consider this approach for ACLS education.

Tobacco Cessation Training for Veterans Affairs Pharmacists: A Clinical Pharmacy Bootcamp. Alan J. Zillich, Purdue University, Karen S. Hudmon, Purdue University, Julieanne E. Himstreet, VA Roseburg Health Care System Eugene Clinic, Pamela S. Belperio, Department of Veterans Affairs Office of Public Health/Population Health, Jennifer A. Bolduc, Minneapolis VA Health Care System, Monica Cyr, Orlando VAMC, Karmen R. Jorgensen, VA Central Iowa Health Care System, Daniel M. Pruski, Martin P. Cruz, VA Medical Center, Hampton Virginia, Heather A. Jaynes, Purdue University, Timothy C. Chen, Veterans Affairs San Diego Healthcare System. Objectives: To evaluate a tobacco cessation training program for Veterans Affairs (VA) clinical pharmacists. Method: An intensive 4-hour tobacco cessation training program was developed using materials adapted from the Rx for Change: Clinician-Assisted Tobacco Cessation curriculum. The program included both live didactic components on topics such as epidemiology, cessation counseling, pharmacotherapy, and clinical practice models; and practice components using patient cases. The program was provided as part of a 5-day regional bootcamp training on chronic disease topics. VA clinical pharmacists nationwide were invited to attend. Participants received training in small groups of 10-15. Written surveys assessed trainees’ pre- and post-program skills. Items were scored on a 5-point Likert scale, assessing trainees’ counseling skills (5 items; range, 1 = poor to 5 = excellent) and self-efficacy for providing tobacco cessation counseling (11 items; range, 1 = not at all confident to 5 = extremely confident). Domain scores for skills and self-efficacy were calculated and Wilcoxon signed rank tests compared paired pre- and post-program responses. Results: A total of 275 pharmacists attended the trainings with 237 (86.2%) providing pre and post course surveys. There was a significant improvement in trainees’ skills and self-efficacy to provide tobacco cessation counseling. Mean item scores were 3.2 before and 3.8 after the course (p < 0.001) for skills and 2.9 before and 3.6 after the course (p < 0.001) for self-efficacy. Implications: This training program significantly improved clinical pharmacists’ skills and self-efficacy to provide tobacco cessation counseling. Continued evaluation of the training program to change clinicians’ practice behavior and skills over time are needed.

Two Pharmacy Practice Departments in Separate States, One Strategic Plan. Robert DiCenzo, Albany College of Pharmacy and Health Sciences, Ronald J. DeBellis, Albany College of Pharmacy and Health Sciences. Objectives: During the 2010-2011 academic year, the Albany College of Pharmacy and Health Sciences (ACPHS) Albany and Vermont Campus Pharmacy Practice Departments used a bottom up approach to develop one strategic plan and supporting action plan. The purpose of this survey was to determine how faculty felt about the process and plan. Method: In the fall of 2010, ACPHS adopted a school structure that included a separate department of pharmacy practice and chair for both campuses. The chairs adopted a strategic planning process that included development of a steering committee, timeline, and multiple meetings using distance technology. Upon completion of the process, all faculty who participated were surveyed using SurveyMonkey®. This study was approved by the ACPHS IRB. Results: 33 of 47 (70%) faculty who participated in the strategic planning process completed the survey. Most faculty understood the objectives of the process (94%) and thought that it was well organized (79%). Even though the process included faculty from two campuses separated by distance, most faculty who completed the survey felt that all faculty were able to contribute to


the process (97%), faculty at both campuses worked cooperatively (82%), and that the goals of the strategic plan represented the goals of both campuses (88%) and were achievable (91%). **Implications:** The results of this survey imply that departments separated by campus and state can work together to develop a single strategic plan from the bottom up that represents achievable goals from both campuses.

**Use of Guided and Non-Guided Video Review in Self-evaluation of Teaching.** Teresa M. Seefeldt, South Dakota State University, Jane R. Mort, South Dakota State University. **Objectives:** Self-evaluation using video review can be used to evaluate teaching effectiveness; however, research supporting the use of video in self-evaluation is limited. This study evaluated video review in self-evaluation of teaching with a specific emphasis on the role of guided reflection. **Method:** A video recording of a fifty minute class period was conducted for each participating faculty member. After viewing the recording, participants provided their initial self-evaluation. Then, a tool for guided reflection was used to assist in the self-evaluation process. A survey was administered to assess faculty opinions on video review. **Results:** Eight pharmacy practice faculty reviewed their teaching videos. In the initial video reflection, participants identified concerns in a variety of areas with the most common being verbal communication (seven faculty), movement around the classroom (four faculty), and distracting mannerisms (four faculty). When the tool was used to guide video review, the participants provided a more thorough review of their teaching and reflected on areas not identified in the non-guided reflection including clarity, active learning, and instructional style. All of the participants felt that guided reflection helped them identify areas of strength and areas for improvement better than a non-guided reflection. Overall, the response to the video-based review of teaching was very positive with all of the faculty indicating that they would use video-based self-evaluation again and that they would recommend it to colleagues. **Implications:** Video review can be an effective tool for self-evaluation of teaching, and questions to guide faculty reflection provide a more thorough review.

**Use of NAPLEX to Validate SUCOP Benchmarking of Student Outcome Achievement.** Kimberly K. Daugherty, Sullivan University, Hieu T. Tran, Sullivan University. **Objectives:** Results from student self-assessment of program outcomes are used to help determine students’ perception of their progression through the curriculum. The Sullivan University College of Pharmacy (SUCOP) program outcomes are divided into three domains. The objective of this study was to determine how well NAPLEX domain data results reflect the graduating Class of 2011’s perception of their achievement of the program outcomes. **Method:** At the end of each quarter, students are asked to rank themselves as novice (score = 1), progressing (score = 2), or competent (score = 3) on the program outcomes as they progress through the first, second, and third professional year. Each program outcome, per year, has been given a benchmark ranking (1, 2, or 3). Percent achievement of the SUCOP benchmark ranking was compared to the percent achievement of the maximum score on the corresponding NAPLEX domain. **Results:** Fifty of the 67 graduating students have taken the NAPLEX exam for the first time (NAPLEX pass rate=94%; MPJE pass rate=100%). Students’ self-rankings and NAPLEX results were as follows (respectively): Domain 1: 93%/70.8% (2.79 ± 0.433/Range 1-3; 12.74 ± 1.29/Range 10-15), Domain 2: 91.0%/71.2% (2.74 ± 0.482/Range 1-3; 12.82 ± 1.21/Range 10-15), Domain 3: 91.4%/71.2% (2.74 ± 0.482/Range 1-3; 12.74 ± 1.19/Range 10-16). **Implications:** This study shows student’s perception of achievement of the program outcomes is at a higher level compared to the NAPLEX domain scores. NAPLEX domain data has been helpful to validate the SUCOP benchmark values.

**Use of Technology to Facilitate Learning Top 200 Drug Information.** Krista Dominguez-Salazar, The University of New Mexico, Donald A. Godwin, The University of New Mexico, Lucas McGrath, The University of New Mexico. **Objectives:** To facilitate acquiring Top 200 drug knowledge through self-directed formative assessments, repetition and immediate performance feedback. **Method:** An interactive web site was developed through collaboration between a pharmacy student, faculty and staff. The website offers fill-in-the-blank, multiple-choice and flashcard formative learning activities. Drug information includes brand/generic name(s), therapeutic and pharmacologic classification, and controlled substance status. The website has a test bank that contains over 1500 interactive questions and provides immediate feedback. Student-Top 200 drug-knowledge is summatively assessed through 10 weekly quizzes and 4 exams in the first semester of pharmacy school. Quiz and exam content is randomly assigned via computer generation using the Top 200 website. **Results:** A number of variables from the formative assessments were correlated with overall average score on the summative quizzes and exams and the best correlations were seen with average formative score (r = 0.498) and number of formative questions answered correctly (r = 0.489). Less well correlated variables included number of tests taken and number of questions answered. **Implications:** The data showed that success on formative assessments was positively correlated with success on summative assessments. These summative assessments were focused on knowledge-based questions and student performance was very high (94.5 ± 4.7%). Subsequent assessment will be more application based and it is anticipated that the foundation set by continued use of the Top 200 database will result in better correlation with performance on these summative assessments.

**Use of a Digital Backchannel as an Interactive Classroom Discussion Tool.** Stacy Taylor, University of Kentucky, Melody H. Ryan, University of Kentucky, Mary M. Piascik, University of Kentucky, Jeff J. Cain, University of Kentucky. **Objectives:** Characterize the usefulness of a digital backchannel as a classroom discussion tool. **Method:** Backchanneling is a form of classroom communication, not between the instructor and students, that includes traditional (whispering and note-passing) and contemporary (texting, email, or other digital) forms that may or may not pertain to the learning activity. Instructors used an internet-based backchannel to garner questions, answers, and comments about lecture and patient case material during separate classes for second (PY2) and third (PY3) year students. Students completed an electronic survey before the backchannel activity. **Results:** 124 of 131 (94.7%) PY2s and 123 of 126 (97.6%) PY3s completed the survey. 74% of PY2s and 85.8% of PY3s report not asking questions they have one or more times per week. The most frequent reason for not asking was “will ask a friend later”. 45.2% of PY2s and 25.4% of PY3s report previous use of digital communication with classmates during class to ask a class-related question. 70% of PY2s and 75.6% of PY3s anticipated that an official digital backchannel would be helpful. 74 (56.4%) PY2s and 61 (48.4%) PY3s posted a total of 146 and 161 comments, respectively. 46.2% of PY2 comments and 48.6% of PY3 comments pertained to the topic and consisted of responses to questions and requests for clarification. Faculty felt the backchannel increased class participation and yielded a greater number of questions/clarifications. **Implications:** A digital backchannel can be useful in generating classroom discussion. Further research is needed in this area.

86
Use of a Survey to Assess Student Learner Level and Support Student Self-Reflection. Amy H. Schwartz, University of South Florida, Marianne E. Koenig, University of South Florida, John Orriola, University of South Florida Shimberg Library. Objectives: To ascertain student knowledge, skills and abilities prior to and upon completion of a first professional year drug information/literature evaluation course. To ensure course content aligned with student level. To provide opportunity for student reflection on the attainment of course objectives (an indirect measure of learning). Method: Pre/post survey methodology was utilized. A two-part survey was developed. Part one requested demographic and background (experience) information. Part two asked students to rank current knowledge, skills and abilities towards ten course objectives, utilizing a 10-point Likert scale (poor to excellent). Pre-course results would be used to determine whether course materials were appropriate for student level; post-course results to ascertain attainment of course objectives. Results: Pre-course survey results provided valuable information regarding student educational level and instructional needs. Approximately 90% of the class had a BS degree or higher; 70% had utilized a search engine; 53% were without research experience; and 47% were without professional writing experience. Pre-course rankings towards course objectives varied significantly, however most students ranked themselves at six (good) or less. In contrast, on the post-course survey few students ranked themselves less than six, with the majority of scores between eight and ten (very good to excellent). Implications: The information obtained from both surveys was invaluable, enabling course instructors the opportunity to adapt to student learning needs. The survey may be used in subsequent course offerings to ensure course content remains appropriate, and provide opportunity for student self-reflection.

Use of Multiple Active-learning Techniques to Deliver a Problem-based Critical Care Elective. Ashley R. Stinnett, University of Arkansas for Medical Sciences, Kathryn K. Neill, University of Arkansas for Medical Sciences, Kendrea M. Jones, University of Arkansas for Medical Sciences. Objectives: To describe a problem-based learning (PBL) critical care elective incorporating multiple active-learning techniques and to assess students’ performance and perception of these methods. Method: A PBL critical care elective utilized a mock chart, audience response technology (ART) and an ACLS simulation exercise to deliver content and assess learning. New case topics were introduced progressively using simulated patients with data updated weekly in a mock chart. Students generated a problem list and group assignments were developed weekly. Pre-tests to assess baseline knowledge and post-tests to assess learning following group presentations and development of a therapeutic plan were administered via ART. During ACLS simulation, each student performed CPR and prepared medications from the crash cart. An end of semester course evaluation used a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree) to assess course delivery methods. Mean [SD] values are reported (n = 11). Results: Eleven students completed the course. Students agreed that the mock patient chart was a beneficial way of presenting patient information (4.91 [0.31]). All students (100%) strongly agreed that the ACLS simulation was beneficial and enhanced their understanding of a pharmacist’s role during ACLS. For items related to quality of the course, all students (100%) indicated the course enhanced their learning, was intellectually stimulating, and they would recommend the course to another student. The average increase in pre- to post-test scores was 38%. Implications: The use of multiple active-learning methods resulted in increased performance on knowledge-based assessments. Students’ evaluation of the course methods and perception of their learning rated high.

Use of the Video Arts and Reflective Writing in a Critical Care Elective. Kendrea M. Jones, University of Arkansas for Medical Sciences, Ashley R. Stinnett, University of Arkansas for Medical Sciences, Kathryn K. Neill, University of Arkansas for Medical Sciences. Objectives: To utilize the video arts and reflective writing to enhance students’ knowledge and understanding of sociological considerations in the care of critically ill patients and assess students’ perception of the value of these activities. Method: Students (n = 11) enrolled in a problem-based learning critical care elective participated in three humanities exercises delivered with video media (15-sec ICU video clip, Frontline documentary Facing Death, and the drama Wit) over the 15-week semester. Students completed reflective writing assignments addressing social, ethical, cultural, and quality of life factors introduced by the video content. Reflective assignments were evaluated using a rubric with three levels of reflection (Descriptive, Analytic, Integrated) for three domains (Self, Patient, Context). The end of semester course evaluation used a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree) to assess students’ perception of the value of the humanities and reflection content. Mean (±SD) values are reported (n = 11). Results: Students agreed the video arts content improved their understanding of the issues involved in caring for critically ill patients (4.73 ± 0.47) and enhanced their knowledge of terminal illnesses (4.82 ± 0.41). For the domains evaluated, the level of reflection achieved (descriptive, analytic, or integrated) was 18%, 32%, 50% [Self], 9%, 64%, 27% [Patient], and 0%, 55%, 45% [Context], respectively. Students indicated reflection assignments increased their awareness of the social and ethical considerations for critically ill patients (4.64 ± 0.51). Implications: The incorporation of humanities content and reflective writing assignments increased students’ awareness of and enabled them to articulate how social, ethical, and cultural factors influence the care of critically ill patients.

Using Student Produced Videos to Increase Knowledge of Self-Care Topics and Nonprescription Medications. Jeanne E. Frenzel, North Dakota State University, Elizabeth Skoy, North Dakota State University, Heidi Eukel, North Dakota State University. Objectives: To develop and implement a video production project to increase student knowledge of self-care and nonprescription medication topics. Method: Faculty created an innovative instructional design in which students produced videos to teach the public about common self-care topics and nonprescription medications. Videos were viewed by student peers, faculty, and community pharmacists. Prior to viewing the videos a pre-exam was administered on a volunteer basis to second and third year pharmacy students to assess the baseline knowledge of self-care topics and nonprescription medications for second year students and to assess the retention of knowledge learned regarding self-care topics and nonprescription medications of third year students. Immediately after viewing the videos a post-exam was administered to both groups. The exam evaluated students’ knowledge of 14 self-care topics before and after the self-care video viewing. Results: Sixty-nine (84%) second year and 39 (45%) third year students participated in the pre/post exam. Results were analyzed using a two-sided Fisher’s exact test under the null hypothesis that students would not gain additional knowledge from viewing student produced self-care videos. Overall, second year students’ scores increased in 12 of the 14 topics. Third year pharmacy students’ scores increased in 11 of the 14 topics. Implications: Implementation of a video production project improved pharmacy students’ knowledge of self-care and nonprescription medication topics.

Using a High-Fidelity Simulation Mannequin to Foster Pharmacy Student Collaborative Care. Scott Bolesta, Wilkes University. Objectives: To assess the impact of a high-fidelity simulation experience
on pharmacy student collaborative care skills. Method: All third-year pharmacy students participated in a one-hour clinical lab in teams of 3 or 4 to assess and treat a patient. A high-fidelity mannequin, pre-programmed with patient vitals and symptoms for either an acute exacerbation of heart failure or asthma, was used as the patient. To gain familiarity with the mannequin teams first practiced their scenarios and received peer and instructor feedback. They then repeated their scenarios while being observed and evaluated through a one-way mirror by the instructor. After the lab students were contacted by email to participate in an anonymous 14-item electronic survey. Results: Sixty-six students participated in the lab and 53 provided consent to participate in the survey. Forty-nine consenting students (92.5%) completed the survey. All but one student agreed or strongly agreed they enjoyed the simulation utilized in the lab, and 73.5% felt it was similar to a real-life clinical scenario. Nearly 86% of students agreed or strongly agreed the lab provided practical experience in collaborative patient care. Students gave the lab a favorable rating of 4.41 on a five-point scale to the opportunity to work as a team. All but one student agreed or strongly agreed the lab fulfilled the learning outcome of “actively, effectively, and appropriately participate in group interactions to achieve common goals.” Implications: This survey data demonstrates that through simulation students can gain valuable collaborative care experience that can be applied in practice.

Using an Injection Simulator Arm to Train and Assess Pharmacy Students’ Injection Administration Technique. Elizabeth Skoy, North Dakota State University, Heidi Eukel, North Dakota State University, Jeanne E. Frenzel, North Dakota State University. Objectives: To evaluate the use of an injection simulator to train and assess third-year pharmacy students on subcutaneous and intramuscular injection administration. Method: A patient simulator injection arm was used to teach injection administration. The simulator assisted students in locating appropriate injection sites and provided feedback of proper injection technique prior to performing injections on a peer. Simulator feedback was provided through the use of colored lights and sound to indicate proper injection administration. Results: Eighty-eight third-year professional students were trained to administer subcutaneous and intramuscular injections. Students performed injections on the simulator arm and then performed injections on a peer. Faculty observed that all students accurately administered an intramuscular injection and 97.7% of students accurately administered a subcutaneous injection to a peer. Injection simulator feedback indicated that 3 (3.4%) students administered intramuscular injections incorrectly and 1 (1.3%) student administered the subcutaneous injection incorrectly. Seventy-nine (89%) students agreed to take a 10 question survey to evaluate their knowledge, preparedness, and confidence preparedness, regarding immunization injection administration. The survey was analyzed using a Chi-Square test. Students agreed the injection simulator increased their confidence and prepared them to administer injections (p < 0.05). Implications: An injection simulator was a valuable tool for teaching pharmacy students proper injection technique and validating observed injections. Use of an injection simulator increased student confidence and prepared them to administer a subcutaneous and intramuscular injections.

Using the iPad Tablet for Didactic and Experiential Teaching: Faculty Experiences and Perceptions. Margarita V. DiVall, Northeastern University, Michael Gonyeau, Northeastern University, Jennifer Kirwin, Northeastern University, David P. Zgarrick, Northeastern University. Objectives: To describe faculty experience with and perceptions about using iPads for teaching and practice activities. Method: A web-based survey was administered to pharmacy practice faculty to determine experience with the iPad device. Faculty rated the benefits of iPad use on a 4-rating Likert scale and described ways to use the device in professional activities. Results: Of 29 respondents (94%), 7 (24%) were current users. Four reported using iPads for teaching in the classroom and for paper/project annotation. Five users (71%) reported using it for student assessment. Current users also reported accessing electronic medical record (EMR) and drug information resources, documenting interventions, performing medication reconciliation and patient education resources on the device. Of the 22 non-users, 81% were interested in using an iPad for teaching and practice. The following were identified as “very likely” use scenarios: connectivity (81%), student assessment (76%), experiential teaching (70%), paper annotation (62%), and seminar/lab teaching (62%). Non-users with clinical sites stated they could use it to access drug information resources (91%), for documentation (73%), patient education (73%), EMR access (55%), and medication reconciliation (55%). Overall, faculty agreed iPads could: foster innovation in experiential (3.61) and classroom settings (3.52); decrease paper waste (3.54); positively impact patient care (3.41) and ability to create course materials (3.36); make student assessment more efficient (3.36); and increase productivity (3.31). Implications: Faculty identified many potential uses for iPad tablets in the classroom and practice settings. As a result, the department plans to provide devices for each faculty member.

Utilization of Personally Identified Ambivalence in Mock Interviews to Teach Motivational Interviewing. Adam Pate, The University of Louisiana at Monroe. Objectives: To evaluate students’ perceptions and preferences using personal scenarios for motivational interviewing application. Method: P3 students have 2 lectures covering motivational interviewing. Motivational interviewing is a complex clinical skill that cannot be learned in one or two lectures. Therefore, the goal of in class time was to stimulate student interest and showcase application. Students received one lecture and were instructed to identify a personal ambivalent habit before the next meeting. Students in groups of three (interviewer, interviewee, and grader) counseled each other on these habits utilizing motivational interviewing strategies. Grading was assigned based on quality of student peer evaluation using an instructor prepared rubric. At the conclusion of class, a voluntary online survey, emphasizing student satisfaction with personal scenarios, link was provided to students. Results: The response rate was 65%. 82% (24) of respondents agreed or strongly agreed they liked using personal scenarios rather than “mock” patient scenarios, and that this exercise helped them see practical application of motivational interviewing. Also, 86% agreed or strongly agreed evaluating fellow students increased competence and understanding. Lastly, 79% agreed or strongly agreed that the exercise increased their comfort utilizing motivational interviewing. Student comments were positive and included statements such as, “I liked that we got to pick out our own problems”, “real, personal experiences made a huge difference”, “hearing actual stories was valuable”, and “being able to see interviewing from both sides was valuable”. Implications: The results of this study indicate that utilizing self-identified ambivalence provides an effective, alternate way of teaching motivational interviewing application.

Validation Study of Elliot and McGregor (2001) and Elliot and Murayama (2008)’s Achievement Goal Questionnaires. Saleh M. Alrakaf, The University of Sydney, Erica J. Sainsbury, The University of Sydney, Grenville J. Rose, Aicareer Institution, Lorraine D. Smith, The University of Sydney. Objectives: To assess the validity of Elliot and McGregor’s achievement goal questionnaire (2001) and Elliot and Murayama’s revised achievement goal questionnaire (2008) in a pharmacy student cohort. To determine which questionnaire is the
best fit of the pharmacy cohort data prior to longitudinal and cross-sectional study of student motivation. **Method:** A total of 205 (67 male, 138 female) undergraduate pharmacy students at the University of Sydney participated in the study. The questionnaires were combined (24 items) and administered during tutorial class time. A confirmatory factor analysis procedure, using AMOS 19 software, was performed. **Results:** The following criteria were used to compare the fit of the questionnaires to the data: chi-square/degree of freedom ratio ($\text{CMIN/df} \leq 2.0$ (Hair et al. 1995), comparative fit index (CFI) $\geq 90$, and root-mean square error of approximation (RMSEA) $< .08$ (Browne and Cudeck, 1995). Results from this analysis indicated that Elliot and McGregor (2001)’s achievement goal questionnaire met the criteria for a good fitting model: $\text{CMIN/df} = 1.80$, CFI = .975, RMSEA = .062, while Elliot and Murayama (2008)’s achievement goal questionnaire did not: $\text{CMIN/df} = 2.58$, CFI = .956, RMSEA = .088. **Implications:** This is the first study to assess the psychometric utility of these questionnaires in an undergraduate pharmacy education setting. Results will allow for future use of Elliot and McGregor (2001)’s achievement goal questionnaire to examine in-depth the goal orientation and approaches to learning of pharmacy students.

**Virtual Pharmacy Examination and Students’ Self-Perceptions of Confidence, Competence and Comfort in OTC Recommendations.**

William R. Hamilton, Creighton University, Bartholomew E. Clark, Creighton University, Victor A. Padron, Creighton University, Mark V. Siracuse, Creighton University. **Objectives:** Assess relationship between a virtual pharmacy examination format and student perceptions of their confidence, competence and comfort in making OTC product recommendations. **Method:** A virtual pharmacy examination format that mimics pharmacist decision making during an OTC product consultation in a community pharmacy was developed and implemented in a nonprescription therapeutics course; there were 40 to 50 possible product recommendations for each examination item. Pre-test and post-test surveys were administered to 182 students at the semester’s start and during the semester’s last week. Survey composition: 1) categorical demographic items, and 2) Likert items assessing students’ self-perceptions of confidence, competence and comfort when making OTC product recommendations. Confirmatory factor analysis was used to establish validity of subscale composition (varimax rotation). Cronbach’s alpha was calculated to determine subscale reliability. Paired sample t-tests were used for pre-post comparisons. **Results:** Usable response rate was 89.7%. Analysis showed a pre-post mean increase of 1.25 on a 5-point scale for a 3-item subscale measuring perceived confidence in making OTC recommendations ($p < 0.001$, Cronbach’s alpha = 0.91). A pre-post comparison of perceived competence showed a mean increase of 1.45 on a 5-point scale ($p < 0.001$). A pre-post comparison of perceived comfort in making OTC product recommendations showed a mean increase of 0.48 on a 5-point scale ($p < 0.001$). No significant differences in perceptions were seen between respondents with or without pharmacy work experience. **Implications:** Improved self-perceived confidence, competence and comfort when making OTC product recommendations appears related to virtual pharmacy examination use through providing more realistic simulation experiences.

**What Characteristics of Schools/Colleges of Pharmacy Drive ‘US News and World Report’ Rankings?** Lauren S. Schlesselman, University of Connecticut, Craig I. Coleman, University of Connecticut. **Objectives:** To determine the association between school/college of pharmacy characteristics and their rankings according to ‘US News and World Report’. **Method:** We evaluated the 78 schools/colleges of pharmacy ranked by ‘US News and World Report’ in 2008. The dependent outcome for this analysis was schools/colleges’ mean ranking score (ranging from 0.0-5.0). Independent variables included academic program, students, faculty, and scholarship characteristics. The adjusted difference in mean ranking score (and 95% CI) associated with each characteristic was determined using a multivariate mixed linear regression model. **Results:** The most powerful identified predictors of mean ranking score included the amount of (NIH and non-NIH) grant funding and Department of Pharmacy Practice (DPP) yearly publication rates ($p \leq 0.001$ for both). The adjusted mean ranking score for schools/colleges receiving $5+$ million and $1+$ million-$5+$ million in scholarly grant funding were 0.77 and 0.26 points higher than those receiving none. Adjusted mean ranking scores for schools/colleges with DPP’s publishing $>20$ and 11-20 papers were 0.40 and 0.17 points higher than those publishing $\leq10$ ($p < 0.05$ for both). Other characteristics found to significantly impact mean ranking score included affiliation with an academic health center (-0.22), a student-to-faculty ratio $>10:1$ (-0.16), and the number of years since a school/college was established (0.23 and 0.41 lower scores for schools/colleges $<50$ years old and 50-100 years old, respectively, compared to those $>100$ years old). **Implications:** The scholarly productivity of schools/colleges of pharmacy appears to be the most potent drivers of ‘US News and World Report’ rankings.

**Zoonotic Illnesses Elective: Student Perceptions and Course Description.** Eric A. Wombwell, University of Missouri-Kansas City, Frank J. Caligiuri, University of Missouri-Kansas City. **Objectives:** Nearly 60% of all human pathogens are known to be zoonotic. An overwhelming majority of emerging and reemerging human pathogens are zoonotic. The purpose of this abstract is to report student perceptions on and describe a zoonotic illnesses elective course offered with the primary objective to increase student knowledge and understanding of the impact various zoonoses have on human health. **Method:** A 15-week zoonotic illnesses course was offered as an elective during the Spring semester of 2011. The didactic course was delivered synchronously to 35 students at 2 sites by live interactive video. At the end of the course, students completed an evaluation of the course. **Results:** A total of 22 zoonotic illnesses were presented throughout the course. All students in the course responded that they believe the course provided important information for their future pharmacy practice. Enrollment for the second offering of the course increased from 35 to 44 students for the Spring of 2012. **Implications:** The relationship between humans and animals is becoming increasingly complex due to changes in land use and human demographics as well as pathogen evolution. In addition, all but one of the highest potential bioterrorism agents are zoonotic pathogens. Pharmacy students believe a course on zoonotic illnesses provides important information for their future pharmacy practice.

**“Open-book” Internet Access During a High-stakes Exam.** Gary D. Theilman, The University of Mississippi, Daniel Riche, The University of Mississippi. **Objectives:** Our students take a series of high-stakes “open-book” problem-solving exams. Despite repeated requests from students, allowing open-book access to Internet resources (drug databases, guidelines, manufacturer websites, etc.) during the exam seemed unfeasible due to potential for collaboration and use of unauthorized software. Our goal was to create a process which controlled and monitored laptop use during the exam. **Method:** Each student was issued a numbered USB flash drive containing a “portable” web browser modified to stay in full screen mode, preventing use of other software on the laptop. Exam webpages rejected connections from all other browsers. Page requests were routed through a proxy server.
which blocked mail, chat and social networking sites. Modifying the browser history was disabled. Intermittent snapshots of the student’s laptop screen and a log of all keystrokes typed during the exam were automatically stored on the USB drive. Afterwards, the contents of the USB drive were archived for potential review. The software made no changes to the student’s computer and was assembled from no-cost components. Results: 82% of students agreed that they felt confident the process prevented other students from using their laptops to gain an unfair advantage during the exam. 81% felt the software was easy to use and 77% agreed that they were able to access the online resources they needed. Students felt faculty having archived browser histories to be the most effective deterrent to cheating. Implications: This process allows students access to online resources while maintaining confidence in the exam’s integrity.

Theoretical Models

Advancing Interprofessional Education Using the Community Service Learning Model. Veronica S. Young, The University of Texas at Austin, Melanie Stone, The University of Texas at Austin. Objectives: Interprofessional education (IPE) aims to transform health professional education to prepare a workforce ready for collaborative practice, emphasizing patient-centered care. An innovative approach of promoting IPE is through community service learning (CSL). CSL is a structured learning experience involving project planning, mentorship, measuring outcomes, and reflection based on a community-identified need. The objective of this collaboration is to foster IPE through meaningful CSL. Method: Medicine and pharmacy from two institutions began planning an interprofessional CSL course in 2009 for implementation in 2011. Components of IPE and CSL were integrated using different learning strategies: online didactics with discussion, live sessions, and fieldwork. Concepts of IPE, ethics, health literacy, social determinants, needs assessment, and project development were incorporated in the context of service learning. This is a longitudinal experience spanning 8 months. Approvals from the respective curriculum committees were sought. Results: Both programs approved the proposals. Efforts to promote the course were necessary to familiarize students with this new learning model. Seventeen medical and pharmacy students enrolled. Ten diverse CSL projects were implemented. Many barriers were encountered, including program structural differences and scheduling conflicts. Periodic student feedback revealed strengths and areas requiring improvement. Earlier effective IPE engagement is needed. Implications: Pharmacy can successfully partner with medicine to foster IPE through meaningful CSL. However, barriers must be addressed to ensure the success of the collaboration.

An Advanced Pharmacy Practice Experience in HIV Telemedicine Services Within the Illinois Department of Corrections. Chessa Nyberg, University of Illinois at Chicago, Melissa Badowski, University of Illinois at Chicago. Objectives: To develop and implement an advanced pharmacy practice experience (APPE) that would increase students’ awareness of, acceptance of, and ability to apply telemedicine concepts in HIV pharmaceutical care. Method: A 6-week APPE was developed utilizing a wide variety of activities including topic discussions, direct patient care, reflective writing, and community outreach to explore various HIV-associated issues within the Illinois Department of Corrections and their relation to pharmacy practice. To determine the students’ perception of learning within the telemedicine setting, a 9-question survey instrument was created and sent to students upon beginning and completion of the rotation. Results: The survey results (n= 12) indicated high satisfaction with the APPE in a variety of different domains including knowledge of telemedicine services (100%), viewing telemedicine as an acceptable health management tool for HIV patient care (100%) and an effective means of pharmacists’ abilities to provide patient care (100%). Implications: The advanced pharmacy practice experience (APPE) provided students with a unique opportunity to develop skills for providing patient care via telemedicine services and expand their understanding of the role of pharmacists within the telemedicine setting.

Assessment of Interventions Made By Student Pharmacists During a Comprehensive Medication Review. Jamie L. McConaha, Duquesne University, Kristen Johnson, Duquesne University, Ann Johnson, Duquesne University. Objectives: To assess clinical interventions performed by student pharmacists in an elderly, ambulatory population. Method: Free, comprehensive medication therapy review appointments were scheduled at a wellness center located within a senior living community. The reviews were conducted by fourth-year student pharmacists and overseen by a clinical faculty member. Marketing of the event was through flyers and word of mouth. Participants were asked to bring any pertinent medication and laboratory data. Interventions were quantified and assessed for clinical significance. Results: A total of 12 patients participated in this pilot event. While all were under a physician’s care through the retirement community, the students were successful in identifying and intervening on potential or actual drug-related problems spanning nine content areas, including: medication education (100%), lifestyle modifications (50%), disease state education (40%), suboptimal therapy (30%), medication adherence (20%), potential ADRs (20%), drug-drug interactions (10%), herbal supplementation (10%), and inappropriate therapy (10%). Interventions occurred on the patient education level and the prescriber did not need to be notified for any dosage or regimen changes. Implications: Student pharmacists on experiential rotations can positively contribute to patient health through clinical interventions performed in an MTM-like setting.

Court is Now In Session: Integrating the Curriculum with an Interactive Mock Trial. Heather M.W. Petrelli, University of South Florida, Erini S.Serag, University of South Florida, Kevin B. Sneed, University of South Florida, Damian Fletcher, Hinshaw & Culbertson, Bob Parrado, Florida Pharmacist Association. Objectives: The purpose of the mock trial was to culminate the first semester of the Pharmaceutical Skills course with a project that encompassed key objectives including professionalism, communication skills, and introductory principles of law and ethics. Method: The format of the mock trial depicted a hybrid between a licensing board meeting and civil trial. A class of 53 PY-1 students was divided into two groups and assigned two different cases involving pharmacy negligence. Students were provided with fictitious fact patterns developed utilizing recent Florida court decisions regarding pharmacy liability. Students were initially assigned to the prosecution or defense and were required to work within groups to fully develop the case. A week prior to the mock trial, students were further assigned roles to represent the prosecution, defense, jurors, lawyers, and focus group members to ensure continuity of knowledge and fairness of workload. Finally, students enacted the case before a Board of Pharmacy member and two attorneys, who served as judges. Students were evaluated on critical thought, supporting documentation through a script, verbal communication, and peer evaluations. Results: Course evaluations revealed student enjoyment of the project and perception that they were able to garner and apply key course objectives. Constructive feedback suggested that less ambiguity and
Students evaluated the assignment through survey and course evaluations. **Results:** Fifty-three PY1 students successfully completed the simulation assignment. Feedback evaluation suggested the students learned from the simulation and became proficient in SL use. Additional feedback suggested the necessity for enhancement of the patient avatars for a more robust patient-student interaction. **Implications:** Virtual Reality simulation in SL is a valuable approach to integrate multiple dimensions of Bloom’s Taxonomy in the curriculum while providing students with multiple opportunities to demonstrate competency. Future endeavors will include the expansion into new pharmacy environments and different standardized patients to encompass a variety of increasingly complex patient-centered pharmacy cases.

**H.E.L.P (Helping Educators Learn Pedagogy): A Faculty Development Program to Improve Teaching.** Aimee F. Strang, Albany College of Pharmacy and Health Sciences, Patricia L. Baia, Albany College of Pharmacy and Health Sciences. **Objectives:** Traditional faculty development models (workshops, seminars) are not always useful in changing behavior in teaching. Research has shown that effective programs must be designed using sound instructional design principles, promote useful objectives, meet varied levels of expertise and knowledge, and be accessible. HELP is a faculty development program for pharmacy educators to extend their expertise in teaching theory and practice, designed in a model that embraces the principles of effective faculty development. **Method:** HELP is an online program designed to develop pedagogical skills and teaching techniques through the study of theory coupled with discussion and hands-on application. Program objectives are to: apply pedagogical strategies and principles; create practical and manageable lessons; adopt a variety of assessment strategies; integrate appropriate technology into teaching; engage in thoughtful dialogue with colleagues. HELP uses a scaffolded approach to learning, incorporates multiple modes of instruction and engages participants in active learning and metacognitive reflection. **Results:** HELP has been offered for two years and had over 30 faculty complete the program. Pre- and post-assessments measured participant achievement of module goals and content. Participants also completed a final narrative describing what they learned and how they changed their teaching/lessons in a pedagogically sound manner. There was a high achievement rate of module goals, and qualitative data indicated a high satisfaction rate with participant’s learning and skill development. **Implications:** HELP is an innovative program that truly engages participants in improving their teaching. Its instructional design, teaching methodologies and online format provided an effective model for future faculty development initiatives.

**Incorporation of a Health Literacy Tool into the Pharmacy Curriculum.** Christian B. Albano, North Dakota State University, Alicia Fitz, North Dakota State University, Anne Ottney, North Dakota State University, Ankit Patel, North Dakota State University, Alan Yan, North Dakota State University, Tegan Buckley, North Dakota State University, Justin Jones, North Dakota State University. **Objectives:** To incorporate and design an elective course that integrates Ability-Based Outcomes (ABOs) such as communication and patient-centered care, active-based learning, and the healthcare problem-health literacy. **Method:** The assessment tool used to guide the course and measure health literacy was developed by the Agency for Healthcare Research and Quality (AHRQ): “Is Our Pharmacy Meeting Patients’ Needs? A Pharmacy Health Literacy Assessment Tool User’s Guide”. The assessment was implemented and conducted at two sites: North Dakota State University’s (NDSU) Student Health Service and the Family Health Care Center of Fargo, ND. The Observational Assessment (Tour) and Staff Survey of the AHRQ tool were used. **Results:** Completion of the

**Developing Empathy in 1st Year Pharmacy Students through Integrated Reflective and Active Learning Classroom Activities.** Krista Dominguez-Salazar, The University of New Mexico, Matthew E. Borrego, The University of New Mexico. **Objectives:** To describe the effectiveness of integrated teaching methods used to foster empathy and understand patient perspectives in 1st year pharmacy students. **Method:** Faculty collaborated to implement multiple teaching techniques in two required courses during the 1st year, first semester pharmacy curriculum. Activities students’ engaged in are as follows: watching a movie, engaging in a written reflective learning assignment about aspects of the movie and a personal simulated counseling experience, providing medication counseling 1:1 human simulation with immediate face-to-face feedback, engaging in small and large group discussions, and performing self-evaluations based on a recorded interaction with a simulated patient during a medication consultation. **Results:** The implementation of multiple teaching activities allowed students to cooperatively and individually form and express perceptions. The group discussions were lively and included expression of both opposing and similar view points. The preview and reflection of medication counseling interactions were made more valuable by heightening the students’ sensitivity to both negative and positive interactions through the movie they watched. **Implications:** The use of media and professional scripting and acting in the movie helped the student more easily understand patient perspectives and engaged emotions of empathy. The contrasting peer debates during group discussions gave students opportunity to learn to demonstrate respect for opposing views without having to agree and broaden their perspectives. The self-evaluations of the video recorded medication counseling enabled the students to see themselves as the patient sees them. Self-realization is a powerful tool to encourage change and further self-evaluation.

**Development And Integration Of Virtual Reality (SecondLife®) Simulation Into Pharmacy Curriculum.** Glenn J. Whelan, University of South Florida, Erini S. Serag, University of South Florida, Joshua Z. Jackson, University of South Florida, Srinivas M. Tipparaju, University of South Florida, Umesh K. Jinwal, University of South Florida, Heather M.W. Petrelli, University of South Florida, Amy H. Schwartz, University of South Florida. **Objectives:** The primary objective was to integrate a patient case simulation for students in a virtual reality (SecondLife® (SL)) setting, which incorporated concepts from multiple courses into one applied format. This activity introduced students to a simulated practice environment, underscoring one of the program’s pillars of bioinformatics. **Method:** A working group of faculty and an instructional designer/3-D virtual simulation developer developed objectives, script, rubrics, and outcome measures for the simulation assignment. The simulation was a scenario in a retail pharmacy setting, where students assumed the role of a pharmacist reviewing, preparing, verifying, and dispensing a prescription for an antibiotic suspension with patient counseling. All students created their own avatars for use in SL. Artificial intelligent patient avatars were constructed in SL, and refined with a beta group (ten students). Copies of the pharmacies and avatars were generated, and students were assigned to a pharmacy to complete the simulation assignment. Additionally, a positive, unanticipated result of the mock trial was that students became more comfortable with public speaking and defending rationale for decisions. **Implications:** The mock trial exposed students to a simulated activity that raised awareness regarding implications surrounding pharmacy law and instilled notions of professionalism and confidence as well as communication and critical thinking skills.
assessment tool produced several outcomes related to addressing ABOs (e.g., communication, active-learning, and health literacy research): ABOs: This course allowed students to understand and appreciate effective communications skills (e.g., listening, verbal, nonverbal, and written skills) in the context of inter-disciplinary relationships to assure safe, efficient, cost-effective utilization of human, physical, medical, informational, and technological resources while taking into account legal, ethical, social, cultural, economic and professional issues. Active-learning: By incorporating and implementing the health literacy assessment tool, students learn by doing. Health Literacy Research: To offer this class as an elective with the focus on using the assessment tool, students learned how research is conducted; gathered data to validate the tool, and became more aware of how to decrease barriers in the pharmacy for patients with limited literacy. Implications: PharmD students may benefit from instruction on health literacy and research, while integrating ABOs.

Interdisciplinary Faculty Involvement in Interprofessional Evidence-based Medicine Courses. Michelle L. Cudnik, Northeast Ohio Medical University, Heather A. McEwen, Northeast Ohio Medical University, Richard J. Kasmer, Northeast Ohio Medical University. Objectives: To describe unique involvement of medicine, pharmaceutical science and pharmacy practice faculty in interprofessional evidence-based medicine courses required for both first year pharmacy and medical students. Method: Northeast Ohio Medical University (NEOMED) created interprofessional evidence-based medicine courses designed to develop pharmacy and medical student skills in clinical research design, data analysis and information literacy. The syllabus utilizes lectures, in-classroom active learning opportunities and assignments to achieve its educational goals. In order to successfully evaluate students, many faculty were needed to moderate small group sessions. Utilizing interdisciplinary faculty, students are able to see how various faculty use these EBM skills in everyday practice. Results: Medical and pharmacy students attend lectures together and participated in 3 different interprofessional group assignments. The class size has approached up to 225 students in these courses. All students completed an anonymous electronic post-course survey on the course and faculty members. The student generated feedback was invaluable and is utilized to adjust the course content and teaching methods. Implications: We believe that the interprofessional education of healthcare professionals at NEOMED will lead to improved teamwork and patient care by interprofessional healthcare teams in the future. NEOMED is committed to the interprofessional education of pharmacy and medical students. The evidence-based medicine courses is one of the first examples of how the university is incorporating interdisciplinary faculty participation into a education of the students.

Novel Use of High-fidelity Patient Simulator for Pharmacology Instruction and Patient Physical Assessment. J. Tyler Stevens, Virginia Commonwealth University. Objectives: The study’s objective was to utilize a high-fidelity patient simulator (Laerdal’s SimMan) within a first year foundations of pharmacy practice course (Foundation / Skills Lab) in order to integrate pharmacology didactic curriculum with patient physical assessment. Method: Two patient cases were developed based on material taught within the autonemics section of the students’ pharmacology course and the physical assessment exercises conducted in Foundations. Students were instructed on proper physical assessment techniques such as heart rate (HR), respiratory rate (RR), and blood pressure (BP). Two weeks prior to the activity students were allotted class time for familiarization with the simulation mannequin. Students were randomly assigned to one of 24 teams consisting of 5-6 members. Teams were required to take a patient history, request laboratory tests, diagnose their patient, administer appropriate pharmacotherapy and monitor the outcome of their treatment. Each team performed one simulation selected at random. A debriefing session was lead by faculty and students completed a survey at the end of the simulation exercise. Results: Student comments were extremely positive concerning the use of the mannequin. An eleven question Likert scale survey tool was used to gather feedback. Results from students (N = 97) indicated that the simulations provided a higher level of critical thinking (3.6 / 4.0) and that simulation cases improved their ability to work as a member of a healthcare team (3.3 / 4.0).

Implications: The data suggests that simulations are received well by students and should serve as novel and effective approach to teaching various topics in pharmacy education.

Pharmacy Education and Faith Integration. Jeffrey T. Copeland, University of the Incarnate Word. Objectives: Integrate faith into pharmacy education. Method: The University of the Incarnate Word is a Catholic higher learning institution committed to educational excellence in the context of faith driven by the core mission values of faith, service, innovation, truth, and education. Opportunities for pharmacy students to pursue faith integration include courses, experiences, and organization involvement designed to enhance spiritual development and expression. Two courses (Pentateuch, Gospels) for one credit hour each in a series, “Applied Biblical Studies (ABS),” provide opportunities to learn and apply biblical teachings to the student’s personal life and the practice of pharmacy. Activities outside of the classroom provided by the Christian organization designed to facilitate faith integration include weekly devotions with postings on the organization’s website, monthly meetings with guest pharmacists from a variety of pharmacy settings discussing the integration of faith into practice, annual retreat, student directed weekly Bible studies, prayer for anonymous requests submitted, and the annual Christmas mission project. Multiple medical mission trips provide pharmacy experiential education. Results: Organization and course participation steadily increase. Local Christian pharmacists volunteer as guest speakers. Students provide positive evaluations. This method of faith integration is absent from current pharmacy schools and medical training programs. Implications: The methods continue to be employed and new methods will be evaluated. Future plans involve graduates serving as mentors and guest speakers and expanding ABS to include additional genres (Historical, Wisdom, Prophets, Acts, Epistles). Future research involves surveying faith implementation of graduates in pharmacy practice. Teaching Pharmacy Students the Principles for Successfully Implementing Pharmacy Care Innovations. Janice L. Pringle, University of Pittsburgh, Lucas A. Berenbrok, University of Pittsburgh, Natalie Capozzalo, Indranid Kar, University of Pittsburgh, Laura E. Minnemoyer, Brian Park, Ana Progovac, Danielle Smuluosky, Elyse R. Weitzman, University of Pittsburgh, Randall B. Smith, University of Pittsburgh. Objectives: The objective of this paper is to present the multi-media curriculum used with pharmacy students in their third professional year to teach the principles for successfully implementing pharmacy care innovations. Method: The University of Pittsburgh School of Pharmacy has developed a multi-media course that provides pharmacy students with the principles that guide the successful implementation of pharmacy care innovations. The course provides a didactic component, which covers the prevalent, but ineffective manner in which innovation diffusion is viewed and presents an approach that is based in complex adaptive systems theory. Complex adaptive systems are a more accurate model to describe how pharmacy care systems behave and react to change. Students are provided information

92
regarding the importance of a system vision, the five main strategies (called levers) that significantly improve the chances an innovation is successfully implemented within any given pharmacy care system. Students are given the opportunity to apply this knowledge within a specific real pharmacy worksite and derive a detailed strategy to guide the implementation of an innovation of their choosing. Results: The course’s pedagogical platform, curriculum resources, pharmacy worksite project guidelines, student performance and feedback from the course are discussed. Implications: As our healthcare system undergoes significant change, it will become imperative that the profession of pharmacy learns how to rapidly and effectively integrate specific innovations that improve patient care at ever-reduced costs.

Technological Advances in Pharmacy Curriculum: Assessment Processes. Kelly L. Matson, The University of Rhode Island, Jayne E. Pawasauskas, The University of Rhode Island. Objectives: Technology has been shown to have beneficial effects in certain classroom settings. Objectives of this study are to: (1) introduce a technological approach to student assessment while limiting potential for e-cheating or academic dishonesty during examinations, (2) implement a cost-effective alternative to paper-based examinations and determine sustainability and feasibility of implementing this method University-wide, and (3) improve remediation and assessment of competencies of pharmacy program. Method: Numerous products offering online examinations were screened, and the best fit was selected. Software has begun trial implementation in pharmacy elective courses. Pre-and post-implementation surveys assessing perceptions and software utility will be administered to students and faculty. Economic analyses will determine cost-effectiveness of online examination methods compared to existing methods. Results: Initial data analysis indicated that the Pharmacy Practice Department alone spends approximately $30,000 annually on the current paper-based examination methods. Follow-up analysis is expected to demonstrate cost-savings of ≥50% with utilization of online examinations. Pre-implementation survey data indicated 67.7% of students feel strategies to reduce cheating are needed, 88% feel using online examinations would help prepare them for licensing examinations, and all students surveyed would like assessment of their progress throughout the pharmacy curriculum. Implications: Demonstration of outcomes will allow incorporation into required coursework within the College, and ultimately, the entire University. A major advantage to this software is its ability to provide longitudinal outcomes across skill sets. This feature will allow better understanding of students’ strengths and weaknesses, assist with remediation processes, and ultimately assist with the College’s accreditation measures.

Utilizing Skype to Deliver Pharmacology Instruction to a Caribbean Based Veterinary School. W. Elaine Blythe, University of Florida. Objectives: To describe the utilization of Skype to deliver 7 credit hours of pharmacology instruction to veterinary students at St. Matthew’s University, School of Veterinary Medicine in Grand Cayman from the instructor’s office in the United States. Method: Skype software was downloaded on the computer located in the classroom and onto the instructors computer. During scheduled class periods the instructor calls into the classroom. External speakers, a microphone and a headset allow for two-way communication. The Skype lectures guided students through the required veterinary pharmacology textbook and allowed for real-time question/answer sessions, integration of case examples, clinical pearls and reiteration of important topics. Qualitative data was collected on the student opinions on the use of Skype at the end of semester. Results: Students were overwhelmingly positive on the use of Skype in the teaching environment. Specifically; the weekly sessions augmented their knowledge of veterinary pharmacology and made them more responsible for their learning. Examples given during Skype lectures were clinically relevant and practical. The instant messaging function on Skype allowed students significant access to the instructor, more so than for faculty “on island”. Students reported being initially apprehensive of the distance format in the curriculum but quickly came to appreciate the utility of Skype. Implications: The use of Skype to deliver pharmacology lectures was seen as a positive and enjoyable learning experience by veterinary students. The instructors’ previous training and experience in pharmacy distance education provided a solid framework for the first distance education course in the veterinary school.

SOCIAL AND ADMINISTRATIVE SCIENCES

Completed Research

A Qualitative Exploration of Pharmacy Students’ Participation in Professional Organizations. Shane P. Desselle, The University of Oklahoma, Gretchen L. Peirce, The University of Oklahoma, Stacey R. Butler, The University of Oklahoma, Jeremy L. Johnson, The University of Oklahoma, Ann E. Lloyd, The University of Oklahoma, Lourdes G. Planas, The University of Oklahoma, Alan R. Spies, The University of Oklahoma, Scott C. Tohlen, The University of Oklahoma, Teresa H. Truong, The University of Oklahoma. Objectives: To gather rich insights from students about their choice and level of participation in professional organizations and resultant implications from doing, or not doing so. Method: Previous research has examined students’ participation in professional organizations through forced-choice scales. This study approached the phenomenon through a qualitative approach, seeking rich information about students’ decision processes for intensity of involvement and reflections about how those might change if restarting the program. Trained interviewers from School of Social Work used a semi-structured interview guide employing a phenomenological perspective to interview 33 students recruited via email listservs to all four professional classes. The number of interviewees was selected to achieve saturation as per grounded theory. Data were transcribed verbatim and thematically coded by two investigators, with a third coder employed to adjudicate differences. Results: Students undertook conscientious and well-planned decision-making heuristics for selecting the number of and their intensity of involvement in professional organizations. A primary theme governing students’ choices was networking. Other themes included commitment, professionalism, and skill-building. Many students demonstrated self-awareness and other leadership skills as a function of their interview responses but did not cite leadership development as a reason for involvement. Those eschewing participation feared over-commitment with academic and social roles. Students defined “involvement” very differently from one another. Implications: The results inform faculty, administrators, and student affairs professionals on student development, recruitment into, and guidance for involvement in professional organizations. Student lack of awareness of leadership development creates an opportunity for educators.

A Survey of Grading Scale Trends in Professional Graduate Doctorate Programs. David M. Baker, Western New England University, Eric C. Nemec, Western New England University. Objectives: The objectives were to determine if any specific grading scales are utilized commonly between four different professional doctorate program types: Pharmacy, Medicine, Physical Therapy, and Law. We will describe the most prevalent grading scales, and contrast grading scale usage across programs. To our knowledge, these questions have not
been addressed concerning professional graduate education. In addition, the study explored unique grading scales, academic freedom in grading, and the demographic breakdown of grading scale usage. **Method:** An online survey was developed and distributed via email to the different Medicine, Physical Therapy, and Law Schools’ respective Deans of Academic Affairs. Second and third email requests were sent in two week intervals after a nonresponse. These responses were compared to our previous study of pharmacy school grading scales. **Results:** We previously reported no consistency or pattern to the prevalence or reasons for grading scale usage amongst doctor of pharmacy programs. However, unlike pharmacy schools the other three professional doctorate programs did demonstrate trends in grading scale usage and presented the most common reason for grading scale selection to be historical precedence. Similar to pharmacy schools, the majority of other professional doctorate schools utilized ten-point percentage scale systems. **Implications:** The results provide guidance for schools of pharmacy as to where professional graduate assessment is and may be heading. To assist further, future research should be directed toward correlating grading scale type with student perceptions of success, postgraduate training placement and professional employment opportunities among the four professional graduate programs.

**AACP Abstracts Reflect Interests of Membership– 2010-11.** Bernard A. Sorofman, *The University of Iowa*, Nathan D. Peterson, *The University of Iowa*. **Objectives:** Abstracts to the AACP meeting reflect membership interests. The purpose of this project was to analyze abstracts submitted to the 2010 and 2011 AACP Annual meetings to determine 1) what educational interests emerged and 2) how educational interests varied by the types of educational institutions (private v. public; newer v. established). **Method:** A content analysis of abstracts submitted to the 2010 and 2011 AACP annual meetings was performed. Coding was based on an analysis of 2010 abstracts and new topics were added as they were identified. Each abstract was reviewed and labeled with 1 to 4 keywords that identified its topical focus. Keywords were arranged into thematic content areas and frequencies noted. Institution analysis was restricted to the academic institution of the first author. Schools were labeled as private or public and with their year of program initiation. Thematic contents were then arrayed by school type and year of program initiation. **Results:** Over 110 themes were identified. The most common categories were Course Design, Assessment, Technology and Educational Strategies. Themes for 2011 indicated a slightly different set of interests from 2010; Integration and Assessment, Technology and Educational Strategies. Themes for 2011 indicated a slightly different set of interests from 2010; Integration and Assessment, Technology and Educational Strategies. Thematic contents were then arrayed by school type and year of program initiation. **Results:** Over 110 themes were identified. The most common categories were Course Design, Assessment, Technology and Educational Strategies. Themes for 2011 indicated a slightly different set of interests from 2010; Integration and Assessment, Technology and Educational Strategies. Thematic contents were then arrayed by school type and year of program initiation. Thematic contents were then arrayed by school type and year of program initiation.

**Academic Help-Seeking Behavior Among Pharmacy Students: A Mixed Method Approach.** Nalin Payakachat, *University of Arkansas for Medical Sciences*, Sarah E. Norman, *University of Arkansas for Medical Sciences*, Schwanda K. Flowers, *University of Arkansas for Medical Sciences*, Sarah E. Norman, *University of Arkansas for Medical Sciences*, Schwanda K. Flowers, *University of Arkansas for Medical Sciences*, Cindy D. Stowe, *University of Arkansas for Medical Sciences*, Renee M. DeHart, *University of Arkansas for Medical Sciences*, Denise E. Ragland, *University of Arkansas for Medical Sciences*, Anne C. Pace, *University of Arkansas for Medical Sciences*, Jan K. Hastings, *University of Arkansas for Medical Sciences*. **Objectives:** To identify factors associated with academic help-seeking behavior among pharmacy students at a public institution. **Method:** Qualitative and quantitative research methods were used to investigate academic help-seeking behavior. Semi-structured focus group interviews were conducted to explore in-depth perceptions of barriers and facilitators in a group of students who had received a D or F grade in any professional year. Content analysis was performed using NVIVO9 in the qualitative phase. Subsequently a survey was developed and administered to all students. The survey was divided into 1) attitudes and academic help-seeking behaviors; 2) health status; 3) personal information; and 4) an open comment section. Structural equation modeling approach was employed to assess relationships among domains of interest using AMOS18.0. **Results:** The prominent facilitators of academic achievement noted from three focus groups were helpfulness of faculty and school administrators. The primary identified barrier was diminished quality of life caused by stress and depression. In the quantitative phase, 304 students (68.6%) completed the survey with 299 usable surveys analyzed. The measurement model demonstrated acceptable fit statistics. Academic help-seeking behavior was mostly influenced by perceived academic competence and perceived professor helpfulness (total effect of 0.48 and 0.46). In contrast, ambivalence and perception of help-seeking as threatening were negatively associated with academic help-seeking behavior (total effects of -0.349 and -0.307). **Implications:** Increasing the academic help-seeking behavior of pharmacy students could be achieved by increasing student’s perceived academic competence and promoting positive relationships between students and professors. The results will help the college address barriers identified by the students.

**An Assessment of the Pharmacist Job Market as Perceived by Pharmacy Students.** Daniel Vacca, *Nova Southeastern University*, Mark L. Glover, *Nova Southeastern University*, Chantal Chan, *Nova Southeastern University*, Estefania Idarraga, *Nova Southeastern University*, Robert Richardson, *Nova Southeastern University*. **Objectives:** The purpose of this study was to assess the perceptions of pharmacy students regarding the pharmacist job market and to learn what strategies they are employing to prepare themselves for their desired career path. **Method:** A sixteen-question survey was distributed in class to first, second, and third-year pharmacy students. The students were informed of the anonymity of the study and were asked to complete and return the survey to the respective investigator. The responses to each survey question were reported as absolute number and percentage. **Results:** Two hundred ninety-nine students completed the survey which included 109, 93, and 97 first, second and third-year students, respectively. The majority of the students were female (65%) and sixty percent had attained a bachelor’s degree. Overall, fifty-four percent of students indicated there was a shortage of pharmacist positions and forty-four percent believed they would have difficulty securing a job after graduation. However, only twelve percent wished they had chosen an alternative career. Seventy-six percent of the respondents were in favor of limiting the number of pharmacy graduates each year. More than eighty percent of the students indicated being employed as a pharmacy intern and building a strong professional network were essential activities in order to obtain a preferred job after graduation. No statistically significant differences were observed between the student classes. **Implications:** Current pharmacy students believe there is a job shortage for pharmacist and are concerned of future employment opportunities, however most remain satisfied with their decision to enter the pharmacy profession.

**An Educational Approach to Decreasing Communication Apprehension Among First-Year Pharmacy Students.** Erica Rogers, *Union University*, Sean R. King, *Union University*. **Objectives:** To evaluate
the influence of required 15-week patient counseling course on first-year pharmacy students’ apprehension towards communication, outcome expectations of communication and self-efficacy for communication. Method: Eighty-seven first-year pharmacy students enrolled in a required patient counseling course were evaluated on three occasions (beginning of course, mid-term and end of course) during the 2009 and 2010 fall semesters concerning their communication apprehension, outcome expectations and self-efficacy for communication. Communication apprehension was measured with the Personal Report of Communication Apprehension-24 (PRCA-24), which asked students to rate their level of agreement with 24-items using a 5-point Likert-type scale. The questionnaire also included a 10-item self-efficacy and a 10-item outcomes scale, each measured on a 5-point Likert-type scale. The efficacy and outcomes items were developed based on course learning objectives. Results: Significant reductions in total communication apprehension (p = 0.013) and significant increases in self-efficacy for communication (p = 0.000) were observed over time. Significant decreases were also seen in the communication apprehension context scores of meetings (p = 0.003) and public speaking (p = 0.022). No differences were found to exist for outcome expectations of communication or the context scores of interpersonal conversations and group discussion. Implications: Results indicate communication apprehension can be decreased and self-efficacy for communication increased in first-year pharmacy students through a required patient counseling course which utilizes small group practice sessions, case studies, role-play and patient simulation exercises in conjunction with didactic lectures. The techniques utilized during the course may be adapted for use with students in advanced pharmacy practice experience programs, residency programs and continuing education programs.

An Educational Strategy to Enhance Pharmacy Students’ Attitudes towards Addressing Health Literacy of Patients. Kate Wilcoxen, Union University, Sean R. King, Union University. Objectives: We sought to evaluate the impact of an educational intervention, based on the Theory of Planned Behavior (TPB), on enhancing pharmacy students’ attitudes towards health literacy and perceived behavioral control and intentions concerning communicating with patients possessing inadequate health literacy. Method: This TPB-based, educational approach consisted of two 50-minute sessions and employed a pretest/posttest control group design. During the first session, experimental students were provided a 50-minute presentation and two out-of-class assignments. The second session included discussion of the assignments, in-class demonstrations, and small group learning activities. The intervention was administered to third year pharmacy students (n = 40) as part of a required patient assessment course. Second year pharmacy students (n = 42) served as controls and did not receive the intervention. Three scales measured the TPB constructs. Cronbach’s alphas for the scales ranged between 0.72 and 0.87. Results: Analyses revealed significant improvements over time within the experimental group for attitudes towards health literacy (p = 0.007) and perceived behavioral control concerning communicating with patients possessing inadequate health literacy (p = 0.007). Significant improvements at posttest for the experimental group when compared to the control were also observed for these two constructs (p = 0.03 and p = 0.02, respectively). Intentions to communicate were high for both groups at posttest (p = 0.003 and p = 0.003). The efficacies for the scales ranged between 0.72 and 0.87. 

An Examination of Pharmacy Students’ Attitudes, Perceived Benefits, Barriers, and Knowledge about Participation in Research. Shane P. Desselle, The University of Oklahoma, Gretchen L. Peirce, The University of Oklahoma, Teresa H. Truong, The University of Oklahoma, Scott C. Tohlen, The University of Oklahoma, Alan R. Spies, The University of Oklahoma, Lourdes G. Planas, The University of Oklahoma, Ann E. Lloyd, The University of Oklahoma, Jeremy L. Johnson, The University of Oklahoma, Stacey R. Butler, The University of Oklahoma. Objectives: To obtain qualitative information about pharmacy students’ knowledge, awareness, perceived benefits and barriers from putative participation in research with faculty. Method: This study employed a phenomenological approach to gather rich information from students in regard to their conceptions about research and heuristics used in decision-making about potential participation. Trained interviewers from School of Social Work interviewed 33 students recruited via email listservs to all four professional classes. Interviewers followed a semi-structured interview guide. The number of interviewees was selected on the basis of achieving saturation as per grounded theory. Data were transcribed verbatim and coded by two investigators, with a third coder employed to adjudicate differences. Results: In spite of repeated efforts by the College to alert students to opportunities for participation in research and some programming dedicated to apprise them of what activities that research might entail, students were largely unaware of opportunities available to them and were not able to express potential skills gained or career diversification options resulting from participation in research. Students even struggled with how to answer certain general questions from the interview guide. Still, themes were inducted to include fear of the unknown, camaraderie with faculty, job opportunities, and over-commitment to endanger academic performance. Implications: Colleges of pharmacy need to recruit more professional students into graduate programs, particularly in the basic and social sciences. Current recruitment strategies and efforts to inform students about the benefits of participating in research, regardless of future career aspirations, may require alternative approaches.

An Update (2011) on Pharmacoeconomic Education in US Schools and Colleges of Pharmacy. Tatiana Makhinova, The University of Texas at Austin, Karen L. Rascati, The University of Texas at Austin. Objectives: The 2007 US Accreditation Council for Pharmacy Education (ACPE) guidelines included recommendations for pharmacoeconomic-related topics. The goal of this study was to determine the extent of pharmacoeconomic education in 2011 across US colleges of pharmacy using a survey method. Method: E-mails were sent requesting syllabi of courses that covered pharmacoeconomic-related topics. A follow-up survey was e-mailed to course instructors asking for: (1) the number of students who completed the course; (2) the availability of pharmacoeconomic projects; (3) if there were pharmacoeconomic rotations available for PharmD students; and (4) the opinion of the instructor about the sufficiency of the hours devoted to pharmacoeconomic-related education. Results: Out of 103 US colleges with PharmD graduates in 2011, 87 schools responded to the survey, and most (N = 85) provided information about topics covered in the course. The most common topics were: types of pharmacoeconomic studies (N = 81; 95%); health-related quality of life (N = 68; 80%); and articles/research evaluation (N = 61; 72%). Most schools covered pharmacoeconomic-related topics in required courses (N = 78). For required courses: the mean number of hours devoted to pharmacoeconomic-related aspects was 20 (range 2-60; median =16); and the mean number of students was 117 (range 28-284; median = 105). Out of 54 responses, projects and rotations were available at 27 and 28 schools, respectively. Most instructors (N = 33 of 54 respondents) thought the number of
hours offered was about the right amount. **Implications:** The results of this study provide information on current trends in pharmacoeconomic education in US colleges of pharmacy.

**Analysis of the Integration of Public Health Principles in Pharmacy Curricula.** Angela M. Hill, University of South Florida, Yashwant V. Pathak, University of South Florida. **Objectives:** In 2006, the American Public Health Association (APHA) produced a policy statement that recognized that pharmacy education might be limited in its ability to provide public health instruction. The American Association of Colleges of Pharmacy (AACP) also listed public health in their 2007 guidelines. The objective of this research was to study the integration of public health courses in PharmD curricula of select pharmacy schools in the United States. **Method:** The curricula of 36 pharmacy schools was collected and evaluated. Curricula information was collected from the official websites of public and private universities across all time zones. **Results:** Data showed that 45% (n = 16) of all the schools included in the sample did not have a public health related course. The study also indicated that 42% (n = 15) private schools incorporated public health courses into their curriculum compared to 58% (n = 21) public schools. Although 39% (n = 14) of them have Colleges of Public Health, only 11% (n = 3) of them offer a PharmD/MPH degree.**Implications:** Based on this study’s findings, there appears to be a tendency for pharmacy programs to incorporate public health related course in their curriculum.

**Analyzing the Quality of Health Information in Dietary Supplement Advertisements.** Shyam Gelot, University of South Florida. **Objectives:** Dietary supplements advertisements have engulfed magazines in forms of weight loss, and vitamin and mineral ads. The majority of these agents are not regulated by the U.S. Food and Drug Administration (FDA). The purpose of this study is to assess the quality of the written health information in dietary supplement advertisements. **Method:** In order to analyze the dietary supplement ads, the DISCERN tool was used to create a rating system. **Results:** A nine factor solution with 50 items, explaining 76% of total variance was found to have the best tool was created by the NHS that assesses various consumer health visuals were used in a ranking system of 1-3. A one represents unfulfilled criterion, and three indicates criterion was met. **Results:** A total of 30 advertisements were analyzed that ranged from weight loss ads, and vitamins. 93% of the ads failed to describe the risk for the treatment. 18% of the ads had no indication that it is FDA approved or not. 60% of the advertisements failed to describe how the treatment works and only 4% indicated how the treatment works. **Implications:** Many of the dietary supplement advertisements that are presented do not describe the risk of each treatment, or explain to the consumer how the drug works. Information, such as how the treatment works, and the risk of the treatment is imperative in providing the quality of health information that is presented to the consumer.

**Applicant Trends in Seat Deposit Forfeits for Colleges & Schools of Pharmacy.** Elizabeth Hefferman, University of Hawaii at Hilo, Kristy M. Nakamura, University of Hawaii at Hilo, Cara R. Suefuji, University of Hawaii at Hilo, Darius T. Kalvaitis, University of Hawaii at Hilo. **Objectives:** The purpose of this pilot study was to investigate trends and peak times during the admissions cycle when applicants to Pharmacy school are most likely to forfeit their seat deposits. Due to the competitive nature of Pharmacy admissions, applicants typically apply to multiple schools and many are willing to forfeit their seat deposit at one school if they are accepted into a preferred school. This study intends to inform admissions officers of these trends and provide a national institutional comparison. **Method:** Invitations were sent via email to the 124 pharmacy schools recognized by the Accreditation Council of Pharmacy Education to participate in an anonymous “Applicant Trends in Seat Deposit Forfeits” survey administered through SurveyMonkey. **Results:** The response rate was 34% (42) of institutions. The average seat deposit forfeit rate was 17% (public) and 28% (private) of enrollment for responding institutions. 86% (36) of the responding institutions reported that one or more students forfeited their seat deposit during the 2010–2011 admissions cycle. The months of May, June and July reflected the highest number of forfeits per school. The results also indicated that a small positive relationship (r = .22) exists between an institution’s seat deposit forfeit rate, and the amount of a seat deposit. Presentation of results will be aggregated by variables such as type of institution (public/private) and accreditation status. **Implications:** Through understanding trends in seat deposit forfeits, admissions officers can make data driven decisions to optimize their admissions policies while also comparing the seat deposit forfeit rate of their institution to national averages.

**Assessing Cultural Competence in first year pharmacy students - Pre-Post Training Design.** Tatjana Petrova, Chicago State University, Harshal Pandya, Auburn University, Elena Petrova, University of Wisconsin Oshkosh. **Objectives:** To measure the impact of two-one hour didactic lectures, two-one-hour lectures using multimedia followed with discussion, and one graded assignment designed to increase cultural competence in first year pharmacy students. **Method:** The purpose of this research was to see if there is an increase in cultural competence after an educational intervention. To address this purpose, the CCCQ was modified. A pre-post study was used to measure the effectiveness of the intervention. First, exploratory data analysis with varimax rotation was used to assess the validity of the instrument. The effectiveness of the cultural competence educational intervention was assessed by comparing the pre and post scores of the subjects on the CCCQ using paired samples t-test. **Results:** A nine factor solution with 50 items, explaining 76% of total variance was found to have the best fit for the data. The factors aligned to the four theoretical domains in the CCCQ namely, Knowledge, Skills, Attitudes and Encounters. Only one domain (Skills) showed statistically significant increase in the post scores (compared to the pre scores) of the subjects in the CCCQ. **Implications:** CCCQ was found to have adequate construct validity regarding its domains. It may be a valid and practical tool to measure pharmacy student’s cultural competence. The educational intervention intended to increase cultural competence showed statistically significant increase only in one domain. This underlines the need for the concept of cultural competence to be implemented across the Pharmacy curriculum in an integrated way.

**Assessing Moral and Ethical Development Using the DIT-2 Tool in Pharmacy Students.** Thomas L. Kier, Ohio Northern University, Karen L. Kier, Ohio Northern University, Jessica Stemen, Ohio Northern University. **Objectives:** The purpose was to identify the moral/ethical reasoning levels of entering pharmacy students (P1) in a 0-6 program compared to students in the fifth year (P5) prior to APPE. The DIT-2 is a multiple choice instrument where individuals are given a series of ethical dilemmas and asked to choose and rank moral courses of action. **Method:** The validated DIT-2 was given to P1 and P5 students over 3 years at a private, Midwestern pharmacy college.
The N2 score was calculated for each cohort and class. Student t-test and ANOVA tests were used. Analysis was performed by The Center for the Study of Ethical Development at University of Alabama.

Results: 476 P1 and 430 P5 students were analyzed. The P1 mean N2 score was 40.75 + 12.00 and the P5 mean was 36.88 + 13.96 (p < 0.0001). There was no difference in the within N2 scores between the P1 or P5 cohorts. An ANOVA with post hoc comparison of N2 scores showed all P1 years compared to all P5 years were statistically different (p < 0.04).

Implications: The N2 score was higher for P1s than for P5s for all 3 years. The data suggests P1s had a higher level of moral/ethical reasoning. The P1 cohort was admitted under different admissions standards which included an interview that involved questions related to moral/ethical reasoning. The current fourth year students will be given the DIT-2 as the first class to have matched data which may provide additional insight into the effect of curricular and admissions processes.

Assessing the Opinions of Pharmacy and Non-pharmacy Stakeholders Concerning Future Pharmacist Involvement in Patient Care, William D. Linn, University of the Incarnate Word, Cesar Trevino, Eli G. Phillips, University of the Incarnate Word, Kevin C. Lord, University of the Incarnate Word. Objectives: The ASHP 2015 Initiative consists of goals and objectives to guide and improve the practice of pharmacy. These goals relate to increasing pharmacist involvement in direct patient care. It is not known whether other healthcare professionals share these same opinions.

Method: An 18-question survey was sent (via SurveyMonkey®) to all deans of pharmacy, medicine, and baccalaureate nursing schools in the US, along with an explanation of the research project. Responses were recorded anonymously. For each question, participants rated the expected level of involvement (five-point likert scale) for each of the professions in various aspects of patient care. Pharmacist was defined as a PGY2-trained primary care specialist; Nurse as having an advanced practice degree; and Physician as completion of internal or family medicine residency. Results: The response rate was low; 53 nursing, 40 pharmacy, and 13 medical school deans completed the survey. As would be expected, for many of the questions the deans thought that their respective profession should play the more prominent role. For the question “Diagnosing and managing minor acute illnesses (diabetes, allergies)” nurses rated themselves at 4.7 and pharmacists at 2.2 on a 5-point scale. Another question “Performing patient follow-ups after medication changes” nurses rated themselves at 4.7 and pharmacists at 3.7.

Implications: During this period of health care reform the roles of each profession will evolve. Forming patient follow-ups after medication changes” nurses rated 4.7 and pharmacists at 2.2 on a 5-point scale. Another question “Performing patient follow-ups after medication changes” nurses rated themselves at 4.7 and pharmacists at 3.7.

Can I Take That Course? A Survey of Prerequisite Policies Amongst Doctor of Pharmacy Programs. Daniel R. Kennedy, Western New England University, Eric C. Nemec, Western New England University. Objectives: As chairs of the Academic Affairs Committee and Student Affairs Committees, the authors conducted this survey of Doctor of Pharmacy programs throughout the United States for guidance regarding the decision of implementing a course prerequisite policy in our new pharmacy curriculum. While the ACPE provides guidance on progression in Standard 19, they do not address a prerequisite policy.

Results: The results could provide guidance for both established and new schools of pharmacy. Method: An online survey tool (SurveyMonkey.com, LLC, Palo Alto, CA) was developed and distributed to the School of Pharmacies’ respective Dean of Academic Affairs via email to elicit responses. A second email request was sent two weeks after a non-response. Statistical analyses of responses were performed using SPSS v19 (SPSS Inc., Chicago, IL). Results: Overall, we had a 52% (N = 61) survey response rate. According to the results, 83.6% (n = 51) of schools utilize a pre-requisite policy and 81.7% (n = 49) utilize a progression policy in their curriculum. Respondents reported that either the curriculum committee (n = 36; 70.6%) or the instructor (n = 20; 39.2%) institutes the majority of these pre-requisites. 85.2% (n = 46) of respondents report that they are either satisfied or very satisfied with their current policy. A statistical breakdown of prerequisite policy by demographics will be presented.

Implications: The majority of Doctor of Pharmacy programs employ both a prerequisite and progression policy in their curriculum. Further, the large majority were satisfied or very satisfied with their policies. This should be taken into consideration when designing or updating pharmacy curricula.

Community Engagement: A Service-Learning Experience at the School of Pharmacy Medicinal Plants Garden. Myriam L. Gonzalez-Cordero, University of Puerto Rico, Ninoshka Coll, University of Puerto Rico, Wanda T. Maldonado, University of Puerto Rico. Objectives: This project describes the activities designed for the Service-Learning Practicum (36 hours, 1 credit IPPE) that engaged Second Professional Year (PY2) students at the School of Pharmacy Medicinal Plants Garden with different community stakeholders. The objectives of the experiences were the following: To establish a relationship between the community and the Medicinal Plants Garden; develop awareness about the benefits and risks of medicinal plants, and to generate different learning approaches about the use and abuse of medicinal plants.

Method: The students established a relationship with fifth grade students of a local school, the support personnel of the School of Pharmacy, and the members of Las Margaritas Center for the Elderly, in order to assess their needs regarding knowledge about medicinal plants. After the assessment, the students developed a walking tour...
Do Pharmacy Students Read Exam Instructions? John P. Bentley, The University of Mississippi, Kim G. Adcock, The University of Mississippi, Joseph A. Dikun, The University of Mississippi, Amod S. Athavale, The University of Mississippi. Objectives: To evaluate, through an indirect method, whether students read instructions provided at the beginning of an exam. Method: On the final exam in our first-professional year, drug literature evaluation course (n = 79 students), we embedded an instruction in our standard instruction set that provided the answer to a multiple-choice question that was commonly missed on past years’ versions of the exam (there were 155 questions on the exam, so this question contributed little to overall scores). Results: The question was answered correctly by a larger percentage of individuals (64.6%) compared to past years (7.9% in 2010; 3% in 2009; p < 0.0001), suggesting that a sizable group of students read the instructions. Although the question was a positive discriminator, the item discrimination index was poor to marginal (0.116). There were no significant associations between answering the question correctly (a surrogate for reading the instructions) and gender (p = 0.265).
or age (p = 0.484). The overall course average for students answering the question correctly was 83.9% compared to 81.5% for students answering incorrectly (p = 0.090; Cohen’s d = 0.40). **Implications:** Other than some anecdotal reports (mostly stories about "Follow the Instructions" exams), little empirical information is available in the education literature regarding assessment instructions. Even when directly provided with the answer to a question in the exam instructions, over a third of the class answered the question incorrectly, suggesting that a number of students did not read the instructions. Given the importance of detail-orientation in pharmacy, this is concerning. Better strategies for communicating exam instructions are warranted.

**Economic, Social and Administrative Sciences (ESAS) Content Taught at United States Schools and Colleges of Pharmacy.** David A. Latif, University of Charleston, Fadi M. Alkhateeb, University of Charleston, Rachel Adkins. **Objectives:** To determine the extent (nature and content) of the ESAS education offered by colleges and schools of pharmacy in the United States and to identify and assess any differences in ESAS curricula. **Method:** A 23-point questionnaire was sent via email to 225 ESAS pharmacy faculty in the United States. The names of the ESAS faculty were identified from American Association of Colleges of Pharmacy (AACP) list. The survey consisted of questions regarding the content of ESAS courses, and faculty perceptions regarding challenges in teaching ESAS content. **Results:** After removing 25 questionnaires due to invalid email addresses, 100 were returned completed for a 50% response rate. Respondents indicated that the most commonly taught courses were Pharmacy Law & Regulations, Clinical Research Methods, and Communications courses, while the least commonly taught courses were Accounting and Finance. Most respondents are not housed in a standalone ESAS department, but would like to be. The majority of respondents believe their schools adequately cover ESAS content with three to five required ESAS courses. **Implications:** Both the educational backgrounds of ESAS faculty and the content taught within the discipline varies greatly. This may be because the content within the ESAS discipline is extremely broad. For example, marketing, economics, management, finance, and accounting are separate disciplines, yet they are all under the umbrella of ESAS. In addition, the diversification in content may result in both the diversity of instructors’ educational background and the lack of a generally approved definition for the ESAS field.

**Engage Me! Exploring Student Pharmacists Perceptions of Professional Engagement.** Benjamin D. Aronson, University of Minnesota, Kristin K. Janke, University of Minnesota, Andrew Traynor, Concordia University Wisconsin. **Objectives:** To develop a student pharmacist consensus definition of professional engagement, a list of professionally engaging and disengaging activities, and characteristics leading to engagement or disengagement. **Method:** A two-round modified Delphi was conducted using student pharmacists who met inclusion criteria intended to select for professionally engaged students. The first round captured feedback on a working definition of professional engagement. Participants also listed activities where they found themselves to be professionally engaged or disengaged, and the characteristics which led to their engagement or disengagement. The second round assessed participants’ agreement with items gathered in the first round using a 5-point likert-scale. **Results:** A student pharmacist definition of professional engagement was created using thirteen items that reached consensus. For characteristics of both professional engagement and disengagement, all items reached consensus. The professionally engaging characteristics were grouped into four main categories: perceptions, relationships, modeling, and altruism. The professionally disengaging characteristics were grouped into the categories: incongruence, negativity, dishonor, and indifference. Seven of nine (77.8%) of the professionally engaging activities reached consensus and were grouped into the categories of learning, development and involvement. None of the proposed professionally disengaging activities reached consensus. **Implications:** This study developed a student pharmacist consensus definition of professional engagement, identified engaging activities, and generated a list of characteristics of professional engagement and disengagement. These findings have implications for creating professionally engaging learning experiences for student pharmacists. These results also suggest that recognizing and fostering the characteristics of professional engagement may be more important than the activities themselves.

**Evaluating the Educating Pharmacy Students to Improve Quality (EPIQ) Program at Seven Colleges of Pharmacy.** Adrienne M. Gilligan, The University of Arizona, Jaclyn Myers, Purdue University, James Nash, Regis University, Jill E. Lavigne, St. John Fisher College, Leticia Moczyngeba, Virginia Commonwealth University, Kimberly S. Plake, Purdue University, Ana C. Quinones-Boex, Midwestern University’s College of Pharmacy-Chicago, David A. Holdford, Virginia Commonwealth University, Donna S. West-Strum, The University of Mississippi, Terri L. Warholak, The University of Arizona. **Objectives:** To describe the implementation of the Educating Pharmacy Students to Improve Quality (EPIQ) program and assess instructors’ and students’ perceptions of the program. **Method:** Seven schools/colleges of pharmacy utilizing the EPIQ program were recruited to participate. Five of the seven schools collected data from students using a retrospective pretest-posttest questionnaire. Questionnaire items included: demographic/school questions, questions assessing students’ perceptions of their quality improvement knowledge, and questions assessing students’ perceptions of the importance of quality improvement and medication error reduction in pharmacy education. For student data, Rasch analysis was conducted to evaluate the change in pre- and post-questionnaire scores. Multiple linear regression was used to assess relationships between demographics/course variables and perception rating changes. Instructors using the EPIQ program at each of the seven participating schools were asked to complete a questionnaire, collecting both qualitative and quantitative data. **Results:** Students’ perceptions about the importance of quality improvement also positively changed. Instructors at all seven schools were positive toward EPIQ and all thought the program was useful. Instructors used the materials differently and some suggested programmatic improvements. **Implications:** The EPIQ program is a viable option for training pharmacy students about quality and safety.

**Evaluation of an Educational Activity Promoting Interprofessionalism Among Pharmacy and Nursing Students.** Aleeda M. Chen, Cedarville University, Mary E. Kiersma, Manchester College, Karen S. Yehle, Purdue University, College of Health and Human Sciences, School of Nursing, Kimberly S. Plake, Purdue University. **Objectives:** To evaluate pharmacy and nursing student perceptions of interprofessional collaboration after completing an educational activity. **Method:** Pharmacists and nurses are essential members of the healthcare team. In order to provide safe and effective patient care, it is essential that they collaborate. Nursing students (N=58) participated in a skills laboratory activity with pharmacy students designed to improve empathy towards older adults. Each student completed an open-ended questionnaire post-activity, answering three questions regarding what they learned from other healthcare professional students as well as prior and post-activity views on interprofessional collaboration. Content analysis was performed using QSR.
Activity. Aleda M. Chen, Cedarville University, Mary E. Kiersma, Manchester College, Karen S. Yehle, Purdue University, College of Health and Human Sciences, School of Nursing, Kimberly S. Plake, Purdue University. Objectives: To evaluate the impact of participating in an aging simulation game on student pharmacists’ perceptions of older adults. Method: The Aging Simulation Experience Survey (ASES) was created from four consecutive years of completed open-ended questionnaires after an aging simulation game. Content analysis was performed, and from the predominant themes, ASES was developed to assess students’ perceptions of older adults. Thirteen items (7-point Likert-type) were completed pre/post-game. An additional 8 questions (7-point Likert-type) were administered post-game related to student experiences of navigating the healthcare system as an older adult. Item-specific changes in perceptions about older adults were analyzed with the Wilcoxon Signed Ranks Test and median values were obtained for the 8 student experience questions using SPSS. Results: A total of 156 first-year student pharmacists completed the ASES. Of the 13 items related to student perceptions, 10 items demonstrated statistically significant improvement for pre-post assessment (p < 0.05), e.g., improved awareness of older adult’s feelings and healthcare experience and patience toward older adults. Among the non-significant items, students at pre-assessment indicated they planned on being understanding toward older adults and respect them (Median = Strongly Agree). Among the student experiences questions, students experienced frustration (Agree), impatience (Strongly Agree), and felt that their attitudes changed as a result of this experience (Agree). Implications: Students may not be aware of older adults’ feelings and experiences prior to experiencing aging-related changes themselves. The ASES provides a tool that can be utilized to inform and guide faculty about student perceptions regarding older adults and curricular development to address these perceptions.

Evaluation of Student Empathy Toward Older Adults Using the Newly-validated Kiersma-Chen Empathy Scale. Mary E. Kiersma, Manchester College, Aleda M. Chen, Cedarville University, Karen S. Yehle, Purdue University, College of Health and Human Sciences, School of Nursing, Kimberly S. Plake, Purdue University. Objectives: To evaluate changes in empathy among pharmacy and nursing students participating in an aging simulation game using a newly-validated measure of empathy, the Kiersma-Chen Empathy Scale (KCES). Method: The KCES was created to measure empathy in pharmacy students and has been found to reliably evaluate changes in empathy among pharmacy and nursing students. The KCES has 15 items related to cognitive and affective empathy, using a 7-point Likert-type scale. Pharmacy and nursing students participated in an aging simulation game (The Geriatric Medication Game®) designed to improve empathy toward older adults. Changes in empathy were measured pre- and post-activity using the KCES. Analyses were performed in SPSS using a Wilcoxon Signed Ranks Test to determine item-specific and total score changes. Results: Pharmacy (N = 158) and nursing (N = 58) students completed the KCES pre- and post-game. Most students were ages 19-21 (74.2%, N = 158) and female (71.7%, N = 142). Students indicated a statistically significant improvement in empathy towards older adults for 13 of the 15 items (p < 0.05, e.g., the need to understand another’s feelings and experiences, the importance of caring and identifying with the patient) and in total score (p = 0.013). Implications: Students may face challenges regarding empathy for older adults prior to experiencing their own aging-related changes. Based on study results, the KCES provides an additional tool that can be utilized to inform and guide faculty about students’ empathy toward older adults. The KCES also could be validated for use in other academic healthcare professions (e.g., physical therapy, dietetics, health sciences) where students will likely work with older adults.

Exploration of Community Pharmacists’ Self-Reported Antidepressant Medication Counseling Behaviors. Michelle L. Breland, University of Connecticut, Salisa C. Westrick, Auburn University, Jan Kavookjian, Auburn University, Bruce A. Berger, Auburn University, David M. Shannon, Auburn University, Raymond A. Lorenz, Auburn University. Objectives: To identify the extent of pharmacists’ self-reported antidepressant counseling, and to identify factors that affect pharmacists’ decisions to provide antidepressant counseling. Method: This cross-sectional study utilized a mixed-mode survey. Three mail contacts with alternate electronic surveys were used. A total of 600 Alabama community pharmacies were randomly selected from the Hayes Retail Pharmacy Directory. One full-time pharmacist from each site was invited to participate. Main outcome measures were pharmacist illness perceptions of depression, pharmacist self-efficacy, perceived organizational and environmental influences, and self-reported antidepressant counseling. Nonresponse bias was investigated. Results: Of the 600 surveys sent, 22 were undeliverable, 1 was partially complete (≥80% of questions answered), and 118 were complete (20.6% response rate). About one-third of pharmacists reported they have assessed few patients’ knowledge and understanding of depression (37.8%), assessed few patients’ understanding of the reason the doctor prescribed antidepressants (30.3%), discussed options for managing side effects with few patients (27.7%), and asked few patients about potential barriers to taking antidepressants as prescribed (31.1%). Four independent variables - consequences, control/cure of illness, episodic timeline, and self-efficacy - affected pharmacists’ decisions to provide antidepressant counseling. Implications: Pharmacists can have a significant impact on medication adherence and patient outcomes among patients prescribed antidepressants through the provision of antidepressant counseling. However, considering the low rates of self-reported involvement in antidepressant counseling by current study respondents and the potential for inflated reporting with self-report survey data, it is imperative that more is done to help facilitate pharmacists’ involvement in this important practice.

Factors Influencing Organizational Citizenship Behaviors among Pharmacy Faculty. Leigh Ann Bynum, Belmont University, John P. Bentley, The University of Mississippi, Erin Holmes, The University of...
Factors that Influence Pharmacy Faculty Retirement Decisions in the United States and Canada. David A. Latif, University of Charleston, Fadi M. Alkhateeb, University of Charleston, Michelle L. Herdman, University of Charleston, J. Shawn Jones, University of Charleston. Objectives: To examine current work-related activities of full-time faculty members 55 years of age and older; to evaluate factors that influence the retirement. Method: A list of pharmacy faculty aged 55 years and older was purchased from the American Association of Colleges of Pharmacy (AACP). Each faculty member on this list was sent a cover letter via Email with an invitation to participate in an on-line survey regarding their perceptions on issues related to their retirement planning behavior. Results: Four hundred eighty-eight faculty members completed the survey instrument (32% response rate). The typical respondent worked 50 hours per week on work-related activities, was active in teaching and service, and had published an average of 5 refereed papers during the previous 36 months. The number of articles published was positively related to the respondent’s target retirement age. The average anticipated retirement age was 66.6 years, and most respondents participated in a defined benefit plan. The majority would revise their target retirement age downwards if conditions were favorable. Implications: Financial status, academic productivity, and higher order needs such as opportunities to engage in meaningful activities were the primary factors that contributed to the retirement decision of faculty members. These findings can be used by institutional administrators in strategic planning related to attracting and retaining quality faculty members.

Ground We Stand On: Observed Theoretical and Methodological Trends in Pharmacy Education Studies. Ozlem H. Ersin, Manchester College, Jon C. Schommer, University of Minnesota. Objectives: Desire for “enhanced level of rigor” in pharmacy education research has been previously communicated by the American Journal of Pharmaceutical Education (AJPE) through its revised IDEAS guidelines for manuscripts on instructional design and assessment (Poirier et al., 2009). More recently, at AACP Teachers Seminar in 2011, a podium challenge was issued to help strengthen the theoretical base of Scholarship of Teaching and Learning (SoTL) in pharmacy education. In accepting this challenge, the authors have conducted a retrospective meta-study of SoTL studies in pharmacy education. The goal of the study was to examine theoretical and methodological trends in published reports; identify prevalent areas of research; and arrive at recommendations for the design and conduct of future SoTL studies. Method: Articles published under the Instructional Design and Assessment section of AJPE since the publication of the revised guidelines were examined for theoretical and methodological bases. Studies were catalogued according to ADDIE framework of instructional design and their content was analyzed to identify epistemological preferences. Study design decisions were analyzed for evidence of theoretical frameworks. Results: With some notable exceptions, SoTL studies focus on pharmacy students and their graduate years. There is paucity of studies focusing on Analysis phase of instructional design. Theories of cognition and motivation enjoy disproportionate popularity. Implications: An evident bias toward course-level interventions suggest outstanding opportunities for curricular- and organizational-level interventions. Professional development beyond graduate years represents exciting directions for SoTL. Rigor of future studies may be strengthened by theories from and collaborations with fields of education, cognitive psychology and organizational development.

How Pharmacy Students Value the Future and its Association with Intended Health Behavior Change. Kimberly B. Blake, Auburn University, Seth Hill, Auburn University, Jan Kavookjian, Auburn University. Objectives: Previous research has demonstrated an association between a person’s value of the future and preventive health behaviors. This study measured the association between value of the future, stage of change, confidence in and perceived importance of the behavior change, perceived control over the behavior change and likelihood to maintain the behavior among first-year pharmacy students. Method: Students chose a personal health behavior to change and monitor progress over a 4-week period. An online survey was administered (n = 139) at baseline and 4 weeks, which measured stage of change, confidence, perceived importance, perceived control and likelihood of continuing the desired behavior after the 4-week period. In addition, a delay discounting task was utilized to assess area under the discounting curve (AUC) as a measure of value of the future. Results: AUC was significantly correlated with perceived likelihood to continue the target behavior change (r = .202, p < .05). Correlations were not significant, however, between AUC and confidence, importance or control. There were no significant differences in AUC across stages of change at baseline or follow-up, nor were their significant differences in AUC among those who progressed, regressed, or remained in the same stage. Implications: Participants who valued the future less (preferred short-term over long-term rewards) reported a lower likelihood of continuing the target behavior, suggesting that individuals with present-biased preferences may be aware of their difficulty with maintaining behavior change. Strategies to help overcome this tendency may be useful in encouraging successful long-term maintenance of preventive health behaviors in these individuals.

Impact of a Longitudinal Public Health Curriculum on Student Pharmacists’ Public Health Skills and Perceptions. Olayinka O. Shiyanbola, South Dakota State University, Jane R. Mort, South Dakota State University, Deidra Van Gilder, South Dakota State University, Annette Johnson, South Dakota State University. Objectives: Evaluate the impact of a longitudinal Public Health Curriculum on
students’ public health skills and perceptions of the Public Health Curriculum. **Method:** Fourth year pharmacy (P4) students developed a Public Health and Wellness project in the Community Pharmacy Care Advanced Pharmacy Practice Experience (APPE) but had limited exposure to public health concepts. Subsequently, a longitudinal Public Health program was incorporated into the pharmacy curriculum (e.g., addition of a third year group project and lectures). Projects of the P4 students taking the pre-longitudinal curriculum were compared to P4 students taking the post-longitudinal curriculum using an evaluation tool. Also, a survey was administered to students to assess their perceptions of the Public Health Curriculum. **Results:** There were no statistically significant differences in students’ skills in developing the P4 public health projects with or without the longitudinal Public Health curriculum. Most believed that their wellness project was innovative (n = 36, 83.7%) and practical (n = 38, 88.4%) and would consider implementing the project if they were the practicing pharmacist at their site (n = 36, 88.4%). Sixty percent agreed that the added lectures and group project in the P3 year helped prepare them for their wellness project during their APPE, but felt that both projects seemed redundant (72.1%). **Implications:** Although the introduction of longitudinal public health content into a curriculum did not show a statistically significant improvement in public health skills, results trended toward improvement. Students’ perceptions regarding the new curriculum were good.

**Incorporating the GAISE Project Recommendations into a Pharmacy Statistics Course.** Spencer E. Harpe, Virginia Commonwealth University, Lisa B. Phipps, Virginia Commonwealth University. **Objectives:** To describe the incorporation of the Guidelines for Assessment and Instruction in Statistics Education (GAISE) project recommendations into a statistics course for PharmD students. **Method:** The American Statistical Association’s 2010 GAISE project recommendations for college-level statistics courses included emphasizing statistical literacy, using real data, stressing conceptual understanding, fostering active learning, using technology to analyze data, and using assessments to evaluate learning. We incorporated active learning activities like case discussions and problem sets. Weekly online quizzes provided additional assessment opportunities. To emphasize statistical literacy through analysis of real data, student groups developed research questions, collected data from classmates, and analyzed their data using SPSS. Statistical knowledge and self-efficacy were measured before and after the course. Student feedback about the project and in-class activities was gathered at the end of the course. **Results:** Responses were received from 121 of 137 (88.3%) students. Improvements in statistical knowledge (67.9% to 86.1%) and self-efficacy (42.9 to 66.3) were noted (p < 0.01 for both). These changes were significantly greater (p < 0.05) than the same measures from the previous version of the course not incorporating the GAISE recommendations. Over 80% of students agreed that in-class problem sets and online assessments helped their learning; <50% of the students agreed that the analysis project helped them learn statistics. The primary problem students reported was difficulty using SPSS for the project. **Implications:** Incorporating the GAISE recommendations was beneficial for student learning. Although students were not always positive about the analysis project, increased hands-on instruction for statistical software could improve project usefulness.

**Institutional Strategies for Best Practices in Minority Recruitment to Achieve Diversity and Inclusion.** Carla Y. White, University of North Carolina at Chapel Hill, Davon M. Townsend, University of North Carolina at Chapel Hill, Amica Simmons Yon, University of North Carolina at Chapel Hill, Latoya Griffin, University of North Carolina at Chapel Hill. **Objectives:** To explore the impact of a continuum of institutional strategies to enhance recruitment of underrepresented students and analyze best practices for achieving diversity and inclusion. **Method:** The Office of Recruitment Development and Diversity Initiatives (ORDDI) was created to provide leadership and accountability for increasing diversity and inclusion at the UNC Eshelman School of Pharmacy. Innovative programs including the Leadership, Excellence and Development Program, LEADership Academy, annual PCAT Review, Pre-Pharmacy Club and the Recruitment Ambassadors Program, were all successfully developed and implemented. Partnerships with pipeline programs, engagement with minority serving institutions and aggressive outreach efforts were key approaches that expanded awareness of career opportunities and professional development. Student engagement and applicant and admission data to schools of pharmacy were tracked for evaluation. **Results:** Over a four year period, 650 recruitment events were facilitated. Sixty percent involved recruitment at minority serving institutions. One hundred and ninety-three prospective students that were admitted had a high level of engagement with the ORDDI. Thirty percent of individuals in this cohort were from underserved and underrepresented backgrounds. Twenty-three minority students were admitted from pipeline programs. The overall minority profile of students increased from 22% to 28%. **Implications:** As society is challenged to accommodate the changing demographics of communities, schools of pharmacy are expected to supply a proportional number of diverse graduates that mirror society. Best practices require a multifaceted effort, including innovative practice models and high-impact programs that produce measurable results, and a complex blend of systems, strategies, and relationships that incorporate instruments for assessment and evaluation.

**Introducing a Longitudinal Multilayer Assessment Process to Evaluate an Interprofessional Course.** Reza Karimi, Pacific University Oregon, Sandra J. Pelham-Foster, Pacific University Oregon, Gail L. Aamodt, Pacific University Oregon, Michael E. Millard, Pacific University Oregon. **Objectives:** To establish a longitudinal multilayer assessment process to evaluate the effectiveness of didactic and experiential curricula in an interprofessional course (IPC). **Method:** The IPC was a one-year long joint curricular activity between seven professional programs: Dental Health Science, Masters of Healthcare Administration, Occupational Therapy, Physical Therapy, Physician Assistant Studies, School of Pharmacy, and School of Professional Psychology. Seven different assessments were implemented. Three assessments were administered during phase I and evaluated students learning in the didactic component of the IPC. The remaining four assessments were implemented during phase II and included group assessment, TRIC (Translation, Responsibility, Identity, and Commitment) analysis, poster presentations, and faculty perception. Phase II evaluated student integration of experiential and didactic curricula of the IPC. **Results:** Both phases I and II provided evidence of students and faculty perceptions of student learning and the effectiveness of the IPC. During phase II, the group assessment and TRIC analysis provided an inclusive picture of what students learned, how they would apply their learning into their future professions, what they identified as their weaknesses and strength, and provided information about students’ commitments to continue building interprofessional skills. Approximately 60 student teams presented IPC posters and faculty’s evaluations of the presented posters indicated that student teams effectively integrated didactic and experiential learning. **Implications:** Phase I and its results were previously presented, as a poster, in the 112th AACP annual meeting. The present poster will discuss the results and effectiveness of phase II assessment tools to assist faculty in effectively assessing an IPC.
Knowledge Management in Colleges/Schools of Pharmacy: Measurement and Implications for Educational and Programmatic Assessment. Sunantara Watcharadomrungkun, University of Wisconsin-Madison. Objectives: 1. Identify and measure Knowledge Management (KM) constructs related to assessment and accreditation processes in U.S. Colleges/Schools of Pharmacy (C/SOPs). 2. Explore processes through which C/SOPs create, disseminate and manage knowledge required for assessment and accreditation processes. Method: A survey was developed to examine three core constructs of Knowledge Management (KM): Knowledge Acquisition (KA), Knowledge Integration (KI), and Institutionalization (IN). The survey, based on Templeton et al. (2002) and Darroch (2003), gathered data describing information-related activities/processes in U.S. Colleges/Schools of Pharmacy (C/SOPs). Of 121 C/SOPs asked to complete the survey online, key informants from 92 (76%) did so between 10/2011-1/2012. Respondents were Deans or individuals they identified as knowledgeable about assessment and/or involved in ACPE accreditation activities (e.g., Associate/Assistant Deans, Assessment or IT Directors, Assessment Committee chairs). Exploratory Factor Analysis (EFA) and Cronbach’s alpha were used to identify and establish reliability of constructs. Results: Factor analysis revealed multiple subprocesses for each KM construct. C/SOPs acquire knowledge (KA) through: learning by doing; strategic management by administrative leaders; learning through direct communication; and development of organizational memory. Knowledge integration (KI) activities differ between faculty and administrators. Lastly, knowledge is utilized (IN) in different ways in responding to: students, technology, and environment. Implications: KM constructs provide a conceptual framing for assessment/accrREDITATION in C/SOPs and for understanding how these processes are organized and revised for meeting ACPE expectations. C/SOPs can learn from other C/SOPs’ knowledge-related assessment and accreditation processes to promote program improvement.

PCAT Scores Are Predictive Of Student Performance In An Integrated Team-Based Learning™ Curriculum. Marianne McCollum, Regis University, Allana J. Sucher, Regis University, Robert C. Haight, Regis University, Leticia Buffet, Regis University, Jeffrey Lalama, Regis University, Chad W. Martell, Regis University, Stephen W. Luckey, Regis University. Objectives: PCAT scores have demonstrated a correlation with student performance in Doctor of Pharmacy programs that use traditional didactic lecture methods. Regis University School of Pharmacy has developed an integrated curriculum delivered using Team-Based Learning™ (TBL). We investigated whether the PCAT score predicted individual student performance in a program using this innovative model across the curriculum. Method: Using panel data, three random-effects models investigated relationships between PCAT scores and individual performance. The outcome measure was defined as scores on individual course elements; team scores were excluded from the analyses. Scores from fall courses in all three professional years were transformed into Z-scores to account for differences between courses. Covariates included math/science GPA, scores from oral and written assessments on interview day, marital status, in-state status, and gender. PCAT scores were evaluated both as a continuous variable and as dichotomous variables (< 40 vs. ≥ 40 and < 80 vs. ≥ 80). Results: Data from 381 student-semesters were available from fall 2009 through fall 2011. PCAT scores positively predicted student achievement (p < 0.01). PCAT scores below 40 and above 80 were associated with poorer and higher performance (p < 0.01 and p < 0.05, respectively). Combined math and science GPA was a significant positive predictor in all three models (p < 0.05). Implications: As with programs using primarily lecture-based delivery methods, PCAT scores and math/science GPA are strong predictors of individual student performance in a TBL curriculum. Additional studies will be conducted to identify other student characteristics that predict achievement in a TBL environment.

Pain Medication Advertisements: Do These Offer Accuracy in Information and Guidance to the Patients? Shyam Gelot, University of South Florida. Objectives: Advertisements for pain management drugs are abundant in health related magazines. Many of the advertisements are misleading in the images conveyed. The purpose of this study is to evaluate and determine whether or not an ad is portraying an accurate and clear description of the pharmaceutical product being advertised. Method: Using a rating system inspired by DISCERN, which is a questionnaire used to evaluate consumer health information, 20 pharmaceutical ads for pain medications were analyzed. Each ad was rated on a scale, increasing from 1 to 5, based on credibility, word count, and relevance. Results: Sixty-five percent of the ads studied had descriptions dedicated to side effects and precautions that was higher in word count than the drug’s indication. Only sixty percent of the ads were deemed credible as well as relevant based on our rating scale. Implications: Most ads have pictures which may or may not be related to the medication, and can often be misleading for consumers. While many of these ads appear to promise excellent results, much of the ad space is occupied by risks, warnings, and side effects. There are also drugs marketed for various treatments, such as Enbrel, which has been advertised as both a pain reliever and treatment for psoriasis. This study helps illustrates the confusion in direct to consumer advertising and a need for tighter regulation by the FDA.

Perceived Stress, Academic Self-concept, and Coping Strategies of First, Second, and Third Year Pharmacy Students. Lena M. Maynor, West Virginia University, Gina M. Baugh, West Virginia University. Objectives: The objective of this study was to determine if a relationship exists between levels of perceived stress and academic self-concept in pharmacy students. Additionally, the study sought to determine if levels of perceived stress vary among first, second, and third year pharmacy students and to characterize coping strategies for stress used by pharmacy students. Method: First, second, and third year pharmacy students were asked to complete the Perceived Stress Scale (PSS-14), the Brief COPE, and the Academic Self-Concept Scale (ASCs) at one time point late in the fall semester. The Tukey-Kramer Method was used to determine the relationship between PPS-14 and ASCs scores. An Analysis of Variance (ANOVA) was used to determine inter-class differences in the Brief COPE scores. Results: Levels of both perceived stress and academic self-concept were high in pharmacy students; however, high levels of perceived stress negatively impacted academic self-concept in this cohort. While levels of perceived stress were high for the entire cohort compared to previously reported PSS-14 scores in college students, the scores were statistically significantly lower for third year students as compared to first and second year students. Students in the cohort reported to employ mostly positive coping strategies to deal with stress. Implications: While both levels of stress and academic self-concept are high in pharmacy students, it is important to recognize the impact of stress on academic self-concept in these students and to continue to encourage positive coping strategies.

Pharmacists’ and Student Pharmacists’ Perceptions of Service-Learning. Jessica J. McFarlane, Palm Beach Atlantic University, Christina Y. Antoun, Palm Beach Atlantic University, Jamie L. Fairclough,
Objective: The objective of this study was to assess pharmacists’ and student pharmacists’ perceptions of service-learning and its impact on communication skills, civic responsibility and education. Method: Surveys were sent to various pharmacy schools and pharmacists using a preceptor database. Both pharmacists and students were asked to answer similar questions regarding their thoughts on service-learning and whether or not they perceived it as being beneficial or a potential benefit to their professional careers. Results: A total of 101 pharmacists and 101 students in the state of Florida completed the survey. Approximately 48.5% of pharmacy students and 39.6% of pharmacists had taken a service-learning course in the past. Pharmacists who had taken a course had stronger perceptions of the impact of service-learning on communication (p = 0.023) and were more interested in participating in service-learning activities in the future (p = 0.008) compared to pharmacists who had never taken a course. Comparisons between students who had taken a service-learning course and those who had not taken a course yielded no statistically significant differences. When students and pharmacists were compared, students were found to have stronger perceptions of the positive impact of service-learning only with respect to education (p = 0.018). Implications: Pharmacists and students who had previously taken a service-learning course found value in the training and expressed interest in future service-learning activities. These findings suggest that there may be a potential benefit to adding a service-learning course to the pharmacy curriculum.

Pharmacy Student Actual and Perceived Knowledge of Issues Related to Underserved Populations Across the Pharmacy Curriculum. Ana M. Lupu, Sharon E. Connor, University of Pittsburgh, Lauren J. Jonkman, University of Pittsburgh. Objectives: Pharmacists are in an important position to eliminate health disparities. Recent accreditation standards and guidelines for pharmacy education reflect the significance of introducing students to effectively caring for underserved patients. The purpose of this study is to help faculty at the University of Pittsburgh School of Pharmacy identify gaps in student knowledge of medically underserved populations (MUPs) in order to guide future curricular improvements. Method: All currently enrolled student pharmacists at the University of Pittsburgh School of Pharmacy were eligible to participate. Subjects were evaluated using the Underserved Knowledge Assessment, modified from Wieland et al. The survey included 10 demographic questions, 13 questions about perceived knowledge, and 20 multiple-choice knowledge questions. Results: Fifty percent of students in each year completed the survey (n = 195). Overall, students received an average score of 55% on the knowledge questions. Actual knowledge scores showed a non-statistically significant improvement across the first three years (P1: 53%, P2: 55%, P3: 59%) but decreased in the fourth year (53%). Students generally felt only somewhat confident in their knowledge of MUPs (86% were somewhat or not at all confident). While there were no significant differences in knowledge among the various socioeconomic factors surveyed, those students who wanted to be involved for caring for the underserved scored significantly higher (p < 0.01) than those who did not. Implications: Student pharmacist actual and perceived knowledge about most topics was generally low. These findings suggest the need to improve student education regarding underserved patient populations through the didactic and experiential learning curriculum.

Pharmacy Students’ Ability to Apply Knowledge of Statistical Concepts Throughout Evidence Based Medicine Coursework. Margaret A. Franklin, Presbyterian College, Julie M. Sease, Presbyterian College. Objectives: Determine retention and evolution of pharmacy students’ abilities regarding research design and statistical skills spanning a series of evidence-based medicine (EBM) coursework. Method: Students were tested with a multiple choice examination to determine their ability to apply basic literature evaluation skills as a part of an EBM course in the first semester of their P1 year. Identical test items were administered to students again in the first semester of the P2 year prior to a biostatistics course and again at the second semester of the P2 year prior to a pharmacotherapy outcomes course. Performance was compared from each examination to determine trends and changes in overall performance. Results: 73 students completed all 3 exam iterations. Average for the original test was highest at 92.3%. The average dropped significantly to 53.8% in fall of the P2 year, but by spring significantly improved to 63% (p < 0.001). Overall, students consistently performed well with questions pertaining to study design and validity. Differentiating between types of data proved to be difficult for students across tests, particularly when ordinal data is used nominally. Students’ ability to identify the appropriate statistical test given a clinical trial example varied between test items. Implications: Retention significantly decreased from one year to the next, but improved after an advanced biostatistics course. However, averages still did not improve to baseline. Next steps include developing a learning module to assist retention.

Pilot Study on Perceptions and Attitudes of Interprofessional Health Sciences Students Toward Palliative Care. Ozlem H. Ersin, Manchester College, Tracy L. Brooks, Manchester College, Jack Chen, Manchester College, Mary E. Kiersma, Manchester College. Objectives: Despite increasing acceptance of palliative care (PC) in acute care settings, evidence is indicative of significant misperceptions and unfavorable attitudes among health care professionals toward the contribution of PC to patient quality of care. Yet, little is known about when and how professionals acquire these attitudes. The goal was to explore PC biases during health professionals’ training years to establish a baseline for the design of subsequent educational interventions. Method: A 5-point Likert scale survey instrument (1 = strongly disagree to 5 = strongly agree) comprising 6 demographic and 18 attitude questions was developed pursuant to review of palliative care literature. Nurse Practitioner (NP) and Physician Assistant (PA) students in the Interprofessional Education Alliance (IPEA) were invited to complete the survey at their convenience and return them to a central collection point. Results: Students (n = 35; response rate = 100%) disagree with statements that “patients receiving palliative care discontinue active treatment” and “palliative care hastens death” (2.9;2.5). Whereas PA students tend to equate palliative care with hospice (3.6), NP students recognize a distinction (2.9). Although both groups agree on need for an interprofessional approach to PC (>4), NP students have a more conservative attitude (3.7) toward involvement of physician assistants on PC teams. Implications: As we educate the next generation of health professionals, it is important to establish baseline understanding as to their existing perceptions and attitudes. Curricula should help health profession students distinguish palliative care from end-of-life hospice care. Educational opportunities exist to sensitize students to the potential benefits of PC to patients and its provision through interprofessional teams.

Explore how perceptions are related to College/School assessment processes. **Method:** A cross-sectional survey was conducted in 121 U.S. Colleges/Schools of Pharmacy (C/SOPs). Key informants from 92 C/SOPs (76%) completed the online survey between 10/2011-1/2012. Respondents were Deans or individuals they identified as knowledgeable about assessment and/or involved in ACPE accreditation activities (e.g., Associate/Assistant Deans, Assessment or IT Directors, Assessment Committee chairs). The survey gathered data regarding assessment and evaluation arrangements and perceptions of Standards 3 (programmatic evaluation) and 15 (student learning outcomes) in ACPE’s Standards 2007. For each of these standards, respondents were asked their agreement (strongly disagree = -3; strongly agree = +3) with statements: 1) The purpose/goal of this Standard is clear, 2) It is clear how to address this Standard, and 3) It is easy to accomplish this Standard. Descriptive statistics and t-test results are presented. **Results:** For both standards, respondents’ perceptions of clarity of purpose/goals were more positive than clarity of how to address them which were more positive than ease of accomplishing them. Comparing Standards 3 and 15, respondents perceived Standard 15 to be clearer with respect to purpose/goal (p = .002) and how to address the standard (p = .006). Differences in ease of accomplishing these standards were nonsignificant. More positive perceptions were related to 1) having a C/SOP assessment center and 2) having an administrator chair the Assessment Committee. **Implications:** Continued development of understanding and tools for programmatic evaluation is needed.

Reasons Students Choose Pharmacy as a Career. Kimberly A. Broedel-Zaugg, Marshall University, Kelly M. Shields, Ohio Northern University, Sami M. Nazzal, The University of Louisiana at Monroe, Tarek M. Mahfouz, Ohio Northern University, Holly Kearny, Ohio Northern University, Nicole Sivak, Ohio Northern University. **Objectives:** The goal of this research is to identify the factors that motivate students to choose pharmacy as a career and to determine if there are significant differences in factor selection by different groups. **Method:** A survey instrument was developed and pharmacy students in two different programs, Ohio Northern University (ONU) as a private institution and the University of Louisiana at Monroe (ULM) as a public institution, have been asked to respond to survey questions electronically. **Results:** Collected data were analyzed to show that a total of 721 students in both institutions (of a total of 1353) responded to the survey with a response rate of 57% for ONU and 42% for ULM. Demographic analyses showed that the majority of respondents were Caucasians/Whites (89%), single (73%), and Catholic (40%) with an average age of 21. The average GPA was 3.36 and 60% of the respondents had test scores between 27-31 (ACT) and between 1210-1390 (SAT). Data suggest that choosing pharmacy as a career was driven mainly by a desire to help and interact with others while addressing the need for pharmacists. **Implications:** Identification of these factors will help guide the recruitment efforts by academic pharmacy institutions to maximize the efficiency recruitment.

Recruitment: Use What You Have to Get What You Want. Jennifer D. Robinson, Washington State University, Giang K. Nguyen, Washington State University, Lindsey R. Schaffer, Washington State University, Dan Tran, Washington State University, Linda G. MacLean, Washington State University. **Objectives:** To determine if the utilization of student ambassadors and alumni in the interview process positively impacts the acceptance rate of high quality PharmD candidates. **Method:** Current student pharmacists were recruited to serve as student ambassadors based on leadership qualities, good academic standing, and passion for our program. Forty student ambassadors were selected. All ambassadors were trained on interview etiquette, appropriate interactions with candidates and interview score normalization. Prior to the interview day, student ambassadors contacted candidates by phone to welcome the student, calm anxiety, answer questions and clarify expectations. On the day of the interviews student ambassadors welcomed candidates, facilitated smooth transitions between interview components, informally answered questions, provided optional tours and actively participated in interviews. Each interview was conducted and evaluated by a faculty member and student ambassador pair. High quality candidates were offered admissions during an exit interaction with an alumnus immediately following the interview process. **Results:** Candidate offers of admission and acceptance rates during the first round of interviews were used to evaluate the initial impact of utilizing student ambassadors and alumni in the interview process. Over a two day period, 115 candidates were interviewed and 81 were offered admission. Candidates have 2 weeks to accept our offer of admission; we received a 92.6% acceptance rate (75/81). The overall acceptance rate for the previous year was 79.4% (104/131). **Implications:** Integration of student ambassadors and alumni into the admissions process before and during interview positively impacts initial acceptance rates of candidates.

Relationships Between Pharmacy Students’ Scores on Adaptability and Goal Orientation. David A. Gettman, D’Youville College. **Objectives:** The primary objective was to evaluate the relationships between pharmacy students scores on 8 subdimensions of adaptability (crisis, cultural, work stress, interpersonal, learning, physical, creativity, uncertainty) and their scores on 3 subdimensions of goal orientation (learn, prove, avoid). The secondary objective was to determine if there were any statistically significant differences in student scores on the subdimensions of adaptability and goal orientation according to age, gender, education, and work experience. **Method:** Adaptability among pharmacy students was assessed using a 55-item individual adaptability measure (Ployhart RE, 2004). Goal orientation was assessed using a 13-item instrument (Brett JF and VandeWalle, 1999). Relationships were tested between the 8 adaptability scores, 3 goal orientation scores, and the other variables using contingency tables and categorical data analysis. **Results:** A 41% response rate was achieved. Student demographic data, adaptability data and goal orientation data are presented. The Chi-squared test or, when appropriate, Fisher’s exact test was used to determine whether statistically significant differences existed in the adaptability and goal orientation responses according to reported student’s characteristics. Odds ratios and 95% confidence intervals are reported as appropriate. A probability level of 0.05 was used to determine statistical significance. **Implications:** This study suggests that higher adaptability scores are associated with learning goal orientation. Faculty and preceptors may be able to mentor pharmacy students to improve their students’ adaptability and in turn their learning goal orientation. It remains to be seen whether preceptors in specific environments (e.g., chain and retail) can help moderate these relationships among pharmacy students with equal success.

Reliability of a Cut Score for an Annual Skills Mastery Assessment (ASMA) Progress Exam. Gregory Alston, Wingate University, Wesley R. Haltom, Wingate University. **Objectives:** Evaluate the reliability of the cut score creating process for the Wingate University School of Pharmacy annual progress exam. **Method:** All multiple choice test items used on the exam were scored using an Angoff process. Two unique faculty panels rated 102 test items in 2011. Included within the 102 item sample were 60 items that had been scored in previous years. The panels were classified as, Clinical PharmD, Non-Clinical PharmD, and Historical Mixed faculty including non-PharmD faculty. Actual
Student performance (p = percent answering correct) was used to label test items as easy (p > .93), medium (p > .68 and p < .88), or hard (p < .62). Faculty panel mean scores were compared using ANOVA, and the item cut score prediction compared to difficulty rating was analyzed using ANOVA. **Results:** Cut scores created by the panels were: Clinical (.57), Non Clinical (.56) and Historic (.58). Results from the one way ANOVA indicate no significant differences between the three panels. Faculty panel determined cut scores by item difficulty averaged 69.59% for easy items, 58.77% for medium items, and 45.53% for hard items. One way ANOVA indicate a statistically significant difference between the groups (p < .001) **Implications:** The data suggest that Faculty panels are reasonably reliable in determining a cut score and in ranking test item difficulty using the modified Angoff process as practiced by Wingate University School of Pharmacy.

**Self-Assessment Practices to Improve Learning among Pharmacy Students.** Spencer E. Harpe, Virginia Commonwealth University, Laura A. Morgan, Virginia Commonwealth University, Lisa B. Pipps, Virginia Commonwealth University. **Objectives:** To examine a group of second-year pharmacy students’ prior use of and attitudes towards self-assessment of learning. **Method:** Students’ attitudes towards self-assessment practices now and in the future were measured based on 10 items using a scale from 1 (Strongly disagree) to 5 (Strongly agree). In addition, two items measured current and anticipated frequency of self-assessment. Students’ prior training in self-assessment methods and the potential benefit of formal training were also surveyed. **Results:** Responses were received from 122 second-year students (89.1% response rate). Only 12 students (9.8%) had received formal guidance on self-assessment; 84 students (68.9%) felt having some formal guidance would be beneficial. Considering their current practices, 46 students (37.7%) reported regularly using some form of self-assessment to monitor learning; 70 (57.4%) noted using self-assessment occasionally. Over half of the students responded that self-assessment would be used regularly as a pharmacist. Students’ attitudes towards self-assessment were generally positive with over 80% of students agreeing with statements that self-assessment skills are useful to improve learning and maintain competency as a pharmacist. Students had lower levels of agreement with statements related to developing a formal plan after self-assessment (62.3%) or using examinations and homework for self-assessment (75.4%). **Implications:** While students felt self-assessment was important in their current studies and the future, few students had received formal guidance on self-assessment skills and most were not using self-assessment regularly. From a curricular perspective, providing formal guidance on self-assessment skills to guide learning may help students develop and use these skills more frequently.

**Self-Reported Health and Dysfunction in Second-Year Student Pharmacists: Utility of a Comprehensive Health Profile Measure.** Jamie L. Faiclough, Palm Beach Atlantic University, Janelle Ludwig, Palm Beach Atlantic University. **Objectives:** Student pharmacists are at increased risk for stress-induced, adverse health outcomes. The objective of this study was to utilize a single, comprehensive health measure (Duke Health Profile) to assess self-reported health and dysfunction in second-year student pharmacists. **Method:** Preliminary and primary (nonparametric) statistical analyses were conducted using SPSS v.18.0. The study sample was comprised of 71 second-year, second-semester student pharmacists enrolled in a PharmD program at a teaching university in the Southeast. **Results:** The Duke Health Profile was found to be only fairly reliable in this sample (Cronbach’s alpha = 0.681); a principal components analysis assessing construct validity revealed a multi-dimensional structure. Although factor scores were computed for each participant across 10 domains (physical health, mental health, social health, general health, perceived health, self-esteem, anxiety, depression, pain and disability), only relationships between factors with non-overlapping domains were explored. Scores from the physical and mental health domains were positively associated (rs = 0.392, p = 0.001), as were scores from the physical and social health domains (rs = 0.297, p = 0.012). Depression and social health scores were inversely related (rs = -0.295, p = 0.012). Self-esteem was not associated with any factor of interest. Results of an ordinal regression analysis revealed the significant effect of pain on perceived health (p=0.010). **Implications:** Results of this study suggest that there may be some utility in using an existing comprehensive health measure to assess self-reported health and dysfunction in student pharmacists; however, the Duke Health Profile instrument must be further validated with a larger and more diverse sample to determine the appropriateness of its use among student pharmacists.

**Staffing and Salaries of Pharmacy Admissions and Student Services Personnel Among U.S. Pharmacy Schools.** Thomas A. Robertson, Palm Beach Atlantic University, Mary J. Ferrill, Palm Beach Atlantic University. **Objectives:** To obtain information from pharmacy schools on staffing levels and salaries for those positions in pharmacy admissions and/or student services. **Method:** A 10-item survey was developed and distributed electronically in September 2011 to senior level administrators in the area of pharmacy admissions and/or student services. The survey was reviewed and approved by the AACP on-line student services digest advisory board and was sent to all members who subscribe to the online digest. Additional names and contact information were also identified using the 2011 AACP membership directory. **Results:** N = 47 (41%) of pharmacy schools participated in the survey. Admissions Salaries: - A majority (53%) of administrative assistants earned an annual salary $31,000 - $40,000 - 46% of admissions advisors/counselors were paid $31,000 - $40,000 - 42% of coordinators were paid $41,000 - $50,000 - 80% of Assistant/ Associate directors were compensated $41,000 - $50,000. - Director salaries ranged from the $30’s – > $80’s. Student Services Salaries: - A majority (52%) of administrative assistants earned under $31,000. - 56% of advisors/counselors were paid $41,000 - $50,000. - Director salaries ranged from the $30’s – > $80’s. **Implications:** The purpose for obtaining this data is to assist schools in decision making as it relates to staffing, salaries and organizational planning in the areas of student services and pharmacy admissions. Similar data is not currently maintained by either the American Association of Colleges of Pharmacy (AACP) or the College & University Personnel Association (CUPA) at the time the data was collected.

**Student Governance in Colleges and Schools of Pharmacy.** Diane B. Ginsburg, The University of Texas at Austin. **Objectives:** Limited information exists in the pharmacy education literature regarding student governance in colleges and schools of pharmacy including types of student government organizations and the involvement of the college or school’s student government association with the university community. Comparative information would be beneficial for individual programs to address issues associated with organizational structure, participation in student government association versus other professional organizations, interface with college administration and faculty, involvement with the greater university community, and impact of participation in student government organizations in the professional development of pharmacy students. This paper will compare student governance structures in colleges and schools of pharmacy in peer tier one institutions. **Method:** Eighteen programs were included in this study representing pharmacy colleges or schools included in the 2011 U.S. News and World Report rankings and those designated as...
tier one. Each programs’ governing documents were analyzed for several parameters including type of governing document, officer positions, organization composition, structure, interface with college/school administration, and interface with university-wide governance structures. Results: Student government organizations were present in all programs included in this study. Some of the organizations did not delineate any relationship between the student government organization and administration. Much of the focus of the organization was in planning of events and communication amongst constituents, e.g. classes, professional pharmacy organizations, and distant campus representatives. A few of the organizations did address more substantive issues and/or roles within in their school. Implications: Student government organizations are important for student communication and interface with the program’s administration, faculty, and staff.

Student Pharmacists’ Attitudes and Intentions to Advise About Complementary and Alternative Medicine (CAM). Marwa Noureldin, Purdue University, Kimberly S. Plake, Purdue University, Matthew M. Murawski, Purdue University, Holly L. Mason, Purdue University. Objectives: To explore student pharmacists’ attitudes towards complementary and alternative medicine (CAM) and examine factors impacting students’ intention to advise patients about CAM therapies as future pharmacists. Method: A 73-item web-questionnaire distributed using Qualtrics Survey Software to students in 10 U.S. colleges/schools of pharmacy. The theory of planned behavior (TPB) was used as the conceptual framework to assess students’ attitudes (3 items), subjective norms (3 items), perceived behavioral control (3 items), and intention to advise about CAM (3 items). Students’ CAM attitudes were assessed using 15 items. Five-point Likert scales ranging from 1 = strongly disagree to 5 = strongly agree were utilized. Demographic characteristics were also examined. Data analysis included descriptive statistics, ANOVA, and regression. Results: A total 880 students responded to the questionnaire, response rate 24.7%. Mean score on the Attitudes Towards CAM scale was 52.57 ± 7.65 out of 75. Personal use was an influential factor on students’ CAM attitudes, along with coursework, family background, and faculty attitudes. Attitudes towards CAM varied by age, gender, race/ethnicity, college of pharmacy, type of institution, previous CAM coursework, and previous CAM use. The TPB model was a good fit for the data with attitudes, subjective norms, and perceived behavioral control explaining 73.7% of the variation in students’ intention to advise about CAM as future pharmacists. Implications: Several factors, including pharmacy curricula, shape student pharmacists’ attitudes towards and intention to advise about CAM. Results can be used to develop educational modules to enhance student pharmacists’ CAM knowledge and willingness to communicate with patients about CAM.

Student Thoughts on Research Opportunities in a New College of Pharmacy - A Focus Group Assessment. Joseph Slonek, Chicago State University, Yolanda M. Hardy, Chicago State University, Nadeem Fazal, Chicago State University, Kumar Mukherjee, Chicago State University, Melany Puglisi-Weening, Chicago State University. Objectives: The purpose of this study is to: 1) determine the factors that motivated students currently participating in research to look for opportunities; and 2) ascertain the students’ perceived value of their personal research experience. Method: Student pharmacists engaged in research projects were invited to participate in a focus group to explore their motivation and expected outcomes of their experience. Participants attended a 2-hour session moderated by two faculty members of the CSU COP. A script of 10 questions was used to begin the conversation and the participants were encouraged to expand on topics they considered most relevant to their research experiences. Results: Reasons for participation varied. Experiences were most often described in positive terms (“fun”, “interesting”, “enjoyed”, “pleasant experience”, etc.) The possibility of monetary reward was of little or no importance. Perceived value of the experience likewise was varied (opportunity to cultivate relationships, increase knowledge, strengthen CV/resume, getting published, etc.) When asked about the relative importance of “project” vs. “advisor”, students said they were mainly concerned with having an advisor they felt comfortable working with. Implications: Students see value in participating in organized research efforts. Students feel rewarded and enlightened from their experiences in a variety of ways and suggest this activity is a valuable contributor to their educational experience.

The Note-Taking Service: Perceptions of Service Implementation in a College of Pharmacy. Nicholas Hagemeier, East Tennessee State University, Erin L. Hankins, East Tennessee State University. Objectives: To assess student perceptions of a student-initiated note-taking service (NTS) upon implementation of a NTS in the first professional year of the Doctor of Pharmacy curriculum in a college of pharmacy. Method: A survey instrument assessing perceptions of a NTS was developed and administered to first professional year students (N = 75, 92.6% response rate) prior to the conclusion of the first semester in which the student-initiated service was implemented. Topics addressed in the survey instrument included: service quality, perceived impact on course attendance, grades and student-faculty interaction, willingness to pay for services, and percent of time devoted to study materials, including NTS notes. Non-parametric tests were employed to examine student perceptions across demographic characteristics. Results: 41% of respondents indicated they use the NTS. Approximately 38% of respondents perceived the NTS would increase learning and positively influence grades. Overall, the students were divided in their perceptions with large percentages agreeing and disagreeing with a majority of instrument items. Males were more likely to use the service in P2 and P3 years (p = 0.002), more willing to pay for the service (p = 0.013), and less likely to take their own notes (p = 0.002). Students who used the service estimated lower semester GPAs than those who did not (p = 0.025). Implications: This exploratory study indicated significant variation in student perceptions regarding the NTS. Future research is warranted to better understand both positive and negative aspects of service implementation, particularly as they relate to student learning.

Thinking Critically about Pharmacy Students Critical Thinking (CT). Margarita Echeverri, Xavier University of Louisiana, Rondall E. Allen, Xavier University of Louisiana. Objectives: Background: Research has shown statistical significant differences between GPA and PCAT, CT and Naplex scores. However, there is not yet a clear understanding about how these measures interact between them and how to use these results to implement CT in pharmacy education. Objective: Scrutinize the Health Science Reasoning Test (HSRT) and PCAT sub-scores and how they relate to academic performance and CT. Method: The HSRT was administrated to 148 first-year pharmacy students and GPAs, PCAT sub-scores and course-grades were collected. Exploratory factor analysis was conducted to identify the constructs aggregating these variables. Results: Seven factors, divided into 3 dimensions, explained 76.7% of the total variance: 1. Academic Performance: Items measuring academic performance grouped into 2 factors named Past-Performance (Math-Sciences-GPA and Pre-Pharm-GPA) and Current-Performance (final grades in Biochemistry, Introduction to Pharmacy, Human Physiology & Anatomy, Immunology, Biostatistics and Calculations). 2. Critical Thinking Skills: The 5 subscales of the HSRT grouped into 2 factors named “Drawing
Conclusions” (Deductive, Analytic, and Inference scales) and “Judging Arguments” (Evaluation and Inductive scales). 3. Basic Competencies: The 7 PCAT sub-scores grouped into 3 factors named Understanding-Applying Concepts (Quantitative Ability, Chemistry and Biology), Active Reading (Reading Comprehension and Verbal Ability), and Presenting Solutions (Conventions of Language and Problem Solving). Statistically significant relationships were found between HSRT-Total-scores and Pre-Pharmacy-GPA (p < .000), PCAT-Biology (p = .03), PCAT-Verbal (p = .05), and final grades in Calculations (p = .000) and Biochemistry (p = .07) Implications: The seven factors found could be used to better understand the students’ specific needs and the relationships between the concepts measured by the tools and also to target the development of CT content along the curriculum.

Use of Antidepressants in Insured, Low-Income Pregnant Women. Jun Wu, South Carolina College of Pharmacy, Lynda Sykes, South Carolina College of Pharmacy, Sharon Sharon. Objectives: To assess the use pattern of antidepressants among insured, low-income pregnant women with depressive disorders. Method: This is a retrospective study using South Carolina Medicaid claims data (2004-2009). Pregnant women (>= 18 years) who had diagnoses of depression in medical claims or antidepressant prescriptions in pharmacy claims in 1 year before pregnancy or during pregnant period were identified. Besides age and race, medical utilization, comorbidity, diagnosis of depression, and antidepressant use in one year before pregnancy were measured as baseline characteristics of the study population and as potential predictors included in a logistic regression model to estimate likelihood of antidepressant use during pregnancy. Results: Among 2866 eligible pregnant women, 46% (n = 1325) had diagnoses of depression and 28% (n = 804) used antidepressants during pregnancy. Nearly 61% (n = 494) of the antidepressant users during pregnancy were new users. Among those who used antidepressants before pregnancy (n = 1344), 77% (n = 1034) did not receive antidepressant treatment after pregnancy. During pregnancy 78% of pregnant women took selective serotonin reuptake inhibitors (SSRI) and average days receiving antidepressants were 114 days. African Americans are 66% less likely to take antidepressants during pregnancy than Whites. The likelihoods of antidepressant use during pregnancy were reduced by 44% in pregnant women who had previous diagnoses of depression before pregnancy and by 30% in those who took antidepressants before pregnancy. Implications: Racial disparity in antidepressant use was found among insured, low-income pregnant women. Appropriate management of depression before pregnancy appears to be important to reduce the likelihood of antidepressant use during pregnancy.

Using the Myers-Briggs Type Indicator and Type Theory to Improve Educational Outcomes. David J. Caldwell, The University of Louisiana at Monroe, Jessica H. Brady, The University of Louisiana at Monroe. Objectives: To determine whether the application of type theory concepts (1) results in improved academic performance or (2) reduces perceived stress levels and improves perceived levels of success in the professional pharmacy curriculum. Method: Ninety-eight first year pharmacy students (P1s) were introduced to type theory and completed the Myers-Briggs Type Indicator (MBTI) process during a pre-semester boot camp. These students were randomly assigned to one of two groups. The intervention group participated in a learning styles activity that focused on the contributions of each psychological type to individuals’ learning styles. This group also received five monthly emails outlining additional information related to type and learning and were encouraged to attend a type-specific group session led by the investigators to discuss study habits and performance. The control group participated in a type-based communication styles activity at boot camp and received no further follow-up. Analysis included comparisons of grade point average (GPA) at the end of the P1 fall semester and a survey administered at that time. Results: After controlling for pre-pharmacy GPA, there were no differences in the P1 fall semester GPA between the two groups. Nor were there group differences found between any of the survey items, including those related to stress or perceived success. There was a low level of application of discussed concepts as reported on the survey (n = 32) and in follow-up group participation (n = 1). Implications: The application of type concepts to improve success was unsuccessful in this study, but engagement of students in the process was low.

Validity of the Cut Score for an Annual Skills Mastery Assessment (ASMA) Progress Exam. Gregory Alston, Wingate University, Wesley R. Haltom, Wingate University. Objectives: Evaluate the validity of the process of creating the cut score for the Wingate University School of Pharmacy annual progress exam. Method: NAPLEX scaled scores for the graduating class of 2011 were compared to P3 and P4 ASMA exam scores, P3 and P4 Rotation Scores and the Cumulative Semester 6 GPA using linear regression. Factor analysis compared NAPLEX Scores to Z scores of P3 and P4 ASMA as well as cut score results for both exams. Results: Semester 6 Cumulative GPA (.63). P3 ASMA (.68) and P4 ASMA (.71) were correlated with NAPLEX scores (p < .001). NAPLEX scores for students scoring below average (z < -1) on the P3 (n = 8) and P4 (n = 10) ASMA exam were significantly below the class average of (100.78), (83.5) on the P3 (p < .001) and 84.70 on the P4 (p < .001) respectively. Students missing the cut on the exam(s) scored worse, (71 average n = 3) and (72 average n = 3) on the P3 and P4 exams respectively. Students missing the cut on the ASMA exam failed the NAPLEX on their first try at a higher rate, P3 (66.67% 2/3) vs (3% 2/66) for those scoring above the cut, and P4 (33.33% 1/3) vs (4.5% 3/67) for those scoring above the cut. Implications: The data suggest that the cut score is reasonably valid in predicting the success of pharmacy students on the NAPLEX exam.

Theoretical Models

A Career Stages Perspective to Pharmacy Faculty Development. Jean M. Woodard, University of New England, Gayle A. Brazeau, University of New England. Objectives: Stages of faculty members’ careers and career development needs are not recognized and uncertainties exist of how mentors/department chairs can address faculty members’ long-term developmental needs. A theoretical model to research developmental expectations of faculty, department chairs and deans as they progress along career stages would be useful. Method: Mezirow’s Transformation Theory (1991) and the Dalton et al. (1977) Four Stages of Professional Careers Model can provide a theoretical framework for the establishment of faculty development programs that address developmental transitions through career stages. Motivation, emotional well-being, commitment and performance improved when teachers were given opportunities to explain/reflect upon experiences from their perspective (Steffy & Wolfe, 2001). Regardless of career stage, individuals need encouragement towards renewal and engagement. Results: Coaching, portfolios, and peer interaction are helpful for beginning faculty members. Peer coaching, learning circles and professional development programs can enable veteran faculty members to continually evaluate their practices and lead to improved contributions. Implications: This model provides a longitudinal framework by which mentors can effectively work with mentees, department chairs can maximize performance and contributions of their faculty,
senior faculty members can continue to contribute to the institution with all faculty members becoming more satisfied with career direction, performance and contributions. This model could be useful in establishing professional development programming and could facilitate teaching coverage as faculty plan to retire and adopt changing roles.

Assessing Teaching Effectiveness in an Interdisciplinary Environment. Marianne McCollum, Regis University, Leah Sheridan, Regis University, Karen S. Pennington, Regis University, Louise Suit, Regis University, Alice M. Davis, Regis University, Susan A. Scherer, Regis University. Objectives: Faculty in the Regis University, Rueckert-Hartman College for Health Professions (RHCHP) teach in their own discipline as well as in teams in interprofessional courses. RHCHP faculty also worked together to assess teaching effectiveness across the college. Two principles framed this work. First was the recognition that data on teaching effectiveness should be collected from multiple sources that inform the faculty member. Second was the desire to develop reflection practices consistent with Jesuit educational philosophy and values that serve to transform the faculty member. Method: The college’s Evaluation and Outcomes Committee (EOC), representing schools within RHCHP, developed processes to assess teaching effectiveness. The effort required consideration of the fact that courses taught in the college are both single discipline and interprofessional, and utilize a variety of delivery mechanisms (e.g., ground-based, online) and pedagogies (e.g., didactic lectures, simulations, team-based and problem-based learning). Results: EOC members developed a comprehensive guide for assessment of teaching effectiveness. Multiple tools (e.g., student course evaluations and peer teaching assessments) were developed to collect feedback from multiple perspectives (e.g., students, peers, self, and colleagues in team-taught courses). Principles and guidance on self-reflection were incorporated to assist the faculty member in identifying opportunities for growth as a teacher. Implications: Faculty in health professional programs are increasingly working together to expand interprofessional teaching activities consistent with contemporary practice. In addition to teaching together, RHCHP faculty also worked collaboratively at the program evaluation level to create mechanisms for principle-centered assessment of teaching effectiveness in a Jesuit interdisciplinary environment.

Creating an Open-Source Electronic Journal. Eli G. Phillips, University of the Incarnate Word, Tina C. Lopez, University of the Incarnate Word, William D. Linn, University of the Incarnate Word. Objectives: Identify and implement a system to start a peer-reviewed publication online. Method: The pharmacy faculty consulted with a convergent media faculty member to investigate options for submitting, reviewing, editing, publishing, and viewing articles online. The group discussed limitations and benefits of all options concerning work to create the website, ease of use, and maintenance. Two primary options were investigated: 1) create a website to post articles and 2) use Open Journal Systems (OJS), an open source content management system. The first option would require the journal’s editorial team to manage the author submissions, review process, and editorial process on their own. In addition, the team would need a web-master to post articles and maintain the website. OJS offered built-in policies, author submission process, reviewing/editing process, editor/author communication capabilities, subscription process, and simple navigation of the website. Because of the straightforward documentation, there were few limitations in terms of educating the journal staff on the reviewing, editing, and publishing process of OJS. Results: The group selected OJS due to the robust and professional processes available. The first issue of the journal was published using Open Journal Systems. Due to the time needed for training of editors to use the software, the author submission and review/editorial process was used for the second issue of the journal. Implications: OJS is a robust product that can be used for peer-reviewed serial publications. Initiatives like OJS are key to academic pursuit of knowledge sharing.

Development and Implementation of a Student-driven Academic “Pharmacy Review” Journal. Eli G. Phillips, University of the Incarnate Word, Tina C. Lopez, University of the Incarnate Word, William D. Linn, University of the Incarnate Word. Objectives: Most Schools of Law in the US operate a student-driven journal known as a “Law Review”. These journals serve a variety of purposes for both students and professionals, including; development of research and editing skills, navigation of the peer review process, advancement of the body of knowledge surrounding the profession, and an avenue for publications by subject matter experts. Many of these attributes are applicable to the practice of pharmacy as well as law, which translates well into a pharmacy based student-driven journal. Method: A review of pharmacy school websites was conducted in an effort to identify student-driven journals at other institutions. An intra-school invitation was sent to select students of the P3 and P4 class soliciting editors for an inaugural edition of a “Pharmacy Review” journal. Editors were selected based on the results of a writing competition. Results: No other pharmacy school in the nation was identified as using the proposed model of a student-driven journal. Said model seeks to solicit original works, including review articles, from subject matter experts which are then edited by student editors for publication in an electronic based journal. Submissions were solicited and received for the inaugural issue which has been fully developed. Funding was achieved through an internal University grant. Implications: Pharmacy schools should provide opportunities to students that are interested in various career paths outside of dispensing roles. One way to develop student interest while simultaneously promoting the advancement of the profession is through the use of a student-driven journal.

Pearls & Diamonds: Finding gems from MMI After one Year. Jacqueline A. Grosser, University of South Florida, Heather M.W. Petrelli, University of South Florida, Nazach Rodriguez-Snapp, University of South Florida. Objectives: The purpose of this poster is to share lessons learned and assessment from the implementation of a Multi-Mini Interview (MMI) process after one year at an inaugural program. Method: After review of the literature and best admissions practices, the MMI with a holistic process was chosen to best suit the needs of the innovative PharmD program with student affairs focus on access to education. This interview method consists of seven ‘stations’ in which applicants rotate every 5 minutes to faculty members assigned to one question. Faculty members score each question utilizing a standardized rubric. Faculty interviewers participated in an interview training program and provided feedback on an evaluation. During the MMI, applicants also complete an evaluation to provide feedback. After the first admissions cycle debriefing occurred with the admissions committee, administration, and faculty interviewers to identify achievements and areas of needed improvement. Finally, data collected from the MMI process was analyzed and assisted in the acceptance decisions of students. Results: Results from faculty training and applicant evaluations indicate that MMI is a desired method for interviewing. Additionally, data collected supports the benefits of MMI such as a lack of faculty bias and increased inter-rater reliability in scoring. Having a quantitative method for reviewing applicants allows for ease of decision-making by the admissions committee. Implications: The standardization of the holistic admissions process allows for the consistent and fair assessment of applicant’s...
cognitive and non-cognitive characteristics. This process aids the admissions committee in making consistent admissions decisions. Having dedicated faculty members to one ‘station’ allows them to become experts on that question and increase construct and content validity of the evaluation rubric.

Utilizing ‘Turn It In’: Assessing Academic Integrity in the Admissions Process. Heather M.W. Petrelli, University of South Florida, Jacqueline A. Grosser, University of South Florida. Objectives: In the 2010-2011 academic year, PharmCAS made available for the first time the Turn It In plagiarism identification service. This poster will explain and discuss how one school utilized the newly offered service in the admissions screening process. Guidelines are also shared by which determinations were made regarding what was considered significant enough to justify a report to AACP. Method: All applications received by PharmCAS were reviewed individually to identify Turn It In Reports. All positive reports were investigated individually by identifying the source, which helps to make a distinction regarding the egregious nature of the potential plagiarism (e.g. a website with sole purpose of helping applicants write and admissions essays). Results of investigation were shared with admissions committee and a review was conducted incorporating all pertinent information. The Admissions committee voted on which cases deem report to AACP. Once AACP notified applicants and identified the reporting school a blanket email was sent to the applicants notifying them of the process from this point AACP convened a panel to review cases and determined sanctions based on the sanction, the Admissions Committee re-reviewed the applicant on a case-by-case basis. Results: Initially 7% of the applicant pool yielded necessary review by the Admissions Committee Of those that were reviewed 61% was reported to AACP. In response to the overwhelming reaction from applicants contacting the school, a specific plan for communication was developed. This required a significant investment of staff and administration effort during an already busy admissions season and ACPE accreditation self-study. Implications: Applicants have the opportunity to learn from this experience about the importance of academic integrity in professional school. Did not review Turn It In reports until late in the season, which resulted in many reports at a given time increasing workload in response to applicant panic. Also resulted in interviewing candidates that otherwise may not have been granted an interview. Guidelines across schools may not be standardized Concerns regarding legal action in response to being identified as the reporting school Increased training for schools for what would constitute a report to AACP and examples of actions would be beneficial Lack of standardized action and participation from all schools.

550 Health Sciences Students and Henrietta Lacks: An Interprofessional Book Club. Jeanine K. Mount, University of Wisconsin–Madison, Christine S. Seibert, University of Wisconsin–Madison, Nadine M. Nehls, University of Wisconsin–Madison School of Nursing, Mickey Sullivan-Fowler, University of Wisconsin–Madison, Christopher W. Olsen, University of Wisconsin–Madison School of Veterinary Medicine, Julie A. Foerstsch, University of Wisconsin–Madison, Lynnette R. Regouby, University of Wisconsin–Madison College of Letters & Sciences. Objective: Conduct book discussion sessions to determine if a common reading program is an effective way to learn about public health issues and working interprofessionally. Methods: In Fall 2010, 552 students from University of Wisconsin’s Schools of Pharmacy, Medicine & Public Health, Nursing and Veterinary Medicine attended one of 50 discussion sessions regarding Rebecca Skloot’s 2010 book The Immortal Life of Henrietta Lacks. Each 1-hour discussion included an interprofessional mix of 15-20 students and a facilitator from a participating school. Using a common facilitator’s guide, discussions addressed topics including informed consent, research ethics, racial disparities, health literacy, compensation for bodily tissue, body ownership, spirituality in health care, and the science of HeLa cells. Results: Effectiveness was evaluated using two online surveys for students and facilitators. Overall, 369/552 students (67%) and 24/31 (77%) facilitators responded; they included students and facilitators from all participating schools. Students felt discussions comfortably engaged interprofessional students in constructive discussion of controversial health science topics. Among students, most (65%) stated they would attend a similar event again next year; only 5% said they wouldn’t unless required to. And most (61%) felt similar events should be required for students in their profession. Facilitator stated the discussions were effective means to stimulate worthwhile discussion (83%) and the Skloot book was a particularly good choice (92%). Implications: Book discussions can encourage productive, interprofessional interactions but should be part of longitudinal programming. This program was not costly and could be easily duplicated by other schools using available facilitator guides.

SCHOOL POSTERS

Advancing Interprofessional Education: A Multi-Pronged Endeavor. Kirsten H. Butterfoss, D’Youville College, Teresa E. Donegan, D’Youville College, Christopher J. Ludoch, D’Youville College, John L. Koford, D’Youville College, Mudit Mudit, D’Youville College, Gary P. Stoehr, D’Youville College, David A. Getman, D’Youville College, Timothy Hutcherson, D’Youville College. Objectives: According to Institute of Medicine reports (2001, 2003), clinical health education should be restructured to prepare a workforce that focuses on patient-centered care to improve patient outcomes. Interprofessional education (IPE) is an innovative approach to healthcare education that is recognized worldwide as a model for meeting this challenge. The objective of this endeavor is to develop a working model that meets the core competencies of IPE and fosters patient-centered collaboration across professions. Method: During AY 2011-12, IPE initiatives at D’Youville College (DYC) – under the direction of the Interprofessional
Advancing Interprofessionalism through Innovative Coursework in Ethics, Public Health and Patient Safety. Veronica S. Young, The University of Texas at Austin, Patrick J. Davis, The University of Texas at Austin, Diane B. Ginsburg, The University of Texas at Austin. Successful transformation of the healthcare system requires a paradigm shift that fosters interprofessionalism at all levels of care, including those delivered by community caregivers. Interprofessional education (IPE) prepares health professions students to deliver care that is safe, patient-centered, and community/population oriented. Early introduction of IPE prior to advanced experiential learning will better prepare students for collaborative practice. In our recently revised curriculum, innovative required and elective courses were implemented, integrating interprofessionalism with several foundational concepts of practice: ethics, public health, and patient safety. Second year students are taught concepts of interprofessionalism through a required ethics course. An interprofessional panel of experts convenes to discuss ethical cases, with students from pharmacy and nursing participating in the forum. In the third year, two electives incorporate public health as the central theme: (1) Interprofessional Care in HIV; and (2) Interprofessional Community Service Learning. A third elective integrates IPE with quality and patient safety. Faculty and students from different professions involved include: medicine, pharmacy, nursing, health professions, public health and social work. In these electives, IPE is fostered through innovative, longitudinal, team-based projects designed to also enhance student awareness of their civic responsibilities. Student feedback so far has been very positive. Examples of barriers encountered include scheduling conflicts, identifying committed faculty, and coordination challenges. Future plans include assessing the impact of early IPE training on student perceptions, ensuring new IPE practice domains are effectively incorporated into additional required and elective coursework, and identifying methods of sustaining these initiatives.

An Assessment of Interprofessional Education in a New School of Pharmacy and Health Professions. Miriam C. Purnell, University of Maryland Eastern Shore, Kathy D. Webster, University of Maryland Eastern Shore, Dennis W. Klima, University of Maryland Eastern Shore, Peter M. Stanford, University of Maryland Eastern Shore, Michael C. Rabel, University of Maryland Eastern Shore. Interprofessional education (IPE) occurs when faculty and students from two or more health professions create and foster a collaborative learning environment. IPE enables health care professionals to optimize the skills of team members from various disciplines, share the management of patients, and optimize patient care. Some educational activities are multidisciplinary (students from different professions share the same learning experience without the benefit of reflective interaction, patient care decision-making responsibility, or clinical interaction mechanisms) rather than interprofessional. The UMES-SPHP represents 5 disciplines; however, there is currently limited interaction between them. Objective: 1) To determine whether current activities are interprofessional vs. multi-disciplinary; 2) To assess students’ and faculty IPE understanding and interest. Methods: A UMES-SPHP Interprofessional Committee (IPC) assessed current activities and made recommendations for future endeavors. Disciplines represented included pharmacy, physical therapy, rehabilitation science and physician assistant. Student and faculty understanding of and potential interest in IPE were assessed using the Survey Monkey® tool. Results: The IPC determined that most activities within the UMES-SPHP are multidisciplinary rather than interprofessional. Survey results indicated the current understanding of IPE and provided direction for future collaborative activities. Implications: The logistics of delivering IPE are multifaceted; therefore, strategic and intentional planning is necessary. Part of the strategy must be to heighten awareness of both faculty and students by surveying them about their understanding of IPE. SPHPs should assess ongoing and planned activities to 1) Discern if they are interprofessional vs. multi-disciplinary and 2) Seek stakeholder input to determine future IPE initiatives.
An Inventory of Interprofessional Activities and Collaborations at Northeastern University School of Pharmacy. Margarita V. DiVall, Northeastern University, Jenny A. Van Amburgh, Northeastern University, Catrina Redderian, Northeastern University, Danielle Gingras, Northeastern University, Judith T. Barr, Northeastern University, Chia-Hung Chou, Northeastern University, Mark Douglass, Northeastern University, Roger A. Edwards, Northeastern University, Jennifer L. Kirwin, Northeastern University, Nathaniel M. Ricks, Northeastern University, J. Andrew Skirvin, Northeastern University, David P. Zgarrick, Northeastern University. Objective: To create an inventory of interprofessional activities at the school of pharmacy (SOP). Methods: School faculty were surveyed about their interprofessional activities and curriculum and assessment data were examined to identify interprofessional didactic, experiential, and research opportunities for our students. Results: While we identified no required interprofessional courses, two interprofessional electives are offered: “Leadership and Advocacy in Health Care” and “Developing an Interdisciplinary Approach to Health Management for Older Adults.” Student surveys revealed significant interprofessional collaborations during experiential training with physicians and mid-level practitioners. Development of a new college-wide interprofessional simulation center by a committee representing the pharmacy, nursing, physical therapy, athletic training, physician assistant, and speech/audiology programs has further stimulated thinking about existing and potential interprofessional educational opportunities. Most recently, the college has launched a health and wellness van which will expand opportunities for interprofessional collaboration and delivery of patient care. SOP faculty reported using interprofessional collaborative patient care models and conducting research with collaborators from other health professions in a variety of health settings, as well as the business and computer industries. The college supports a number of faculty and student development opportunities, including Interprofessional Grand Rounds, “Difficult Conversations” rounds that focus on the psychosocial issues of patient care, and a clinical faculty development series. Pharmacy student leaders organize an annual College Health Fair which involves students and faculty from other disciplines delivering important health screenings, preventative health information, and flu shots to our University Community. Implications: Diverse interprofessional opportunities exist for students, faculty, and research collaborations.

Building A New Pharmacy School around a System of Five Core Tenets. Ruth E. Nemiere, Fairleigh Dickinson University, Michael J. Avaltron, Fairleigh Dickinson University, Chadwin Sandifer, Fairleigh Dickinson University, Tracy E. Templin, Fairleigh Dickinson University, Marysol Diego, Fairleigh Dickinson University, Yong Guo, Fairleigh Dickinson University, Dongmi Kim, Fairleigh Dickinson University, Robin L. Pucci, Fairleigh Dickinson University, Barbara Rossi, Fairleigh Dickinson University, Ligia Westrich, Fairleigh Dickinson University, Beth Fisher, Fairleigh Dickinson University. Objective: In creating the foundation for a new program, the leadership of the Fairleigh Dickinson University Medco School of Pharmacy developed a set of five key tenets: Think, Communicate, Advocate, Lead and Implement. In an attempt to develop and integrate all programs, systems and services, the School’s administrative faculty, teaching faculty and staff used these five tenets as the core for development in a number of key areas. Methods: The key areas of tenet integration have included: • Integration into the creation of the curricular scaffold; • Creation of operational and strategic plans for the school; • Incorporation as an assessment theme during the student candidate interview process; • As a development tool within the professional pharmacy practice coursework; • As a key professional development tool for its personnel; • As a programmatic assessment tool; • As a central thematic element for orientation and co-curricular programming, as well as in a host of other areas throughout the entire school platform. Results: Preliminary evaluation of individual programmatic elements and key implementation areas is underway, with faculty, staff and students all
working toward building a community that revolves around these core values and the practices that accompany them. Implications: The ongoing implications now revolve around assessing the value of these tenets toward the education, retention and preparation of students, faculty and all stakeholders within the program. As continued assessment takes place, the program will determine whether students are more prepared to take on leadership roles within pharmacy and health care related areas.

Class Liaison Pilot Project to Streamline Student-Professor Communication and Promote Effective Class Learning. Abhay S. Patel, Rutgers, The State University of New Jersey, Vani Kumaran, Rutgers, The State University of New Jersey, Purnima Verma, Rutgers, The State University of New Jersey, Andrianna Guo, Rutgers, The State University of New Jersey, Evelyn R. Hermes-DeSantis, Rutgers, The State University of New Jersey, Joseph A. Barone, Rutgers, The State University of New Jersey. Objective: Large class sizes and professors’ multiple obligations may pose obstacles in facilitating effective professor-student communication. One innovative solution that the Rutgers student class council proposed to the pharmacy deans and faculty is a “pilot liaison program,” which was adapted and modified from University of Maryland, School of Pharmacy. The program’s objective at our school is to streamline student-professor communication in a class of 219 students to make the processing of information at both ends more effective. The entire student body will benefit from resultant communication that is more concise. Methods: Liaisons organize and forward faculty responses to lecture material and course information inquiries to the entire student body. Students submitted applications to the class leadership for a “student liaison” position. Factors such as student involvement, time of submission, and an additional written component for the Spring 2012 semester helped in assigning an appropriate liaison for each required course. After the first semester of utilizing the liaison program, feedback from students, professors, and liaisons was obtained through an online survey. Questions assessed the effectiveness, interest, and resultant benefit of the program. Results: After analyzing survey results, we found that students and faculty viewed the program as a beneficial adjunct to current academic services. Implications: Goals for further developing the program include increasing student and professor awareness by providing a presentation to the pharmacy school. In executing the program, we see further potential in its versatility and amenability in all pharmacy school settings similar to that of Rutgers University.

College-Sponsored Interdisciplinary Grand Rounds. Debra Parker, The University of Findlay, Laura Perry, The University of Findlay, Lori Emsthausen, The University of Findlay, Jean E. Cunningham, The University of Findlay. Background: The University of Findlay College of Pharmacy strives to foster professional development and lifelong learning in our students. In recent years, the importance of learning and applying healthcare in an interdisciplinary manner has been increasingly emphasized. With these two concepts in mind, the College of Pharmacy (CPHM) developed a college-sponsored interdisciplinary continuing education (“Grand Round”) series open to both students and healthcare professionals in the surrounding community. Objective: To describe the following: 1) development of the Grand Round series involving cross-disciplinary speakers at each event, 2) methods to advertise and recruit practitioners and students from a variety of disciplines 3) partnerships developed in order to award continuing education credit for audience participants, and to 4) describe the success of the series in terms of active learning techniques implemented, attendance, continuing education awarded and ability to attract an interdisciplinary audience. Finally, a description of the needs assessment (pre-test, post-test, and follow-up survey) will also be described. Results and Implications: Pending.

Developing an Interprofessional Educational Approach for a Geriatric Population. Joshua Caballero, Nova Southeastern University, Lisa Deziel-Evans, Nova Southeastern University, Naushira Pandya, Nova Southeastern University College of Osteopathic Medicine, Robin Cooper, Nova Southeastern University College of Osteopathic Medicine. Objective: Describe the development and implementation of an interprofessional geriatric advanced pharmacy practice experience (APPE) and educational seminar. Methods: The Nova Southeastern University (NSU) Geriatric Education Center (GEC), funded by the US Department of Health and Human Services, developed an interprofessional clinic to serve the elderly community. Within this setting, an interprofessional outpatient geriatric APPE was developed to expose students to using a collaborative care approach with osteopathic medicine, optometry, psychology, and dentistry. Additionally, faculty from the several disciplines (including those from the GEC) participated in a student seminar sponsored by the Interprofessional Joint Degree Grant program. During the seminar, students from various disciplines were grouped together and presented geriatric patient cases. Student evaluations and reflections were collated and reviewed. Results: During the geriatric APPE, pharmacy students provided pharmacotherapeutic recommendations, patient counseling, and actively participated in interprofessional journal clubs and presentations (n = 30). Overall, preceptor student APPE evaluations (n = 8) were positive. During the interprofessional seminar, students interacted and showcased their knowledge in treating the patient and gained insight into their colleagues’ specialties. Pharmacy student reflections (n = 20) viewed the seminar as a valuable opportunity to interact with other professions and develop camaraderie. Implications: Interprofessional collaboration is of particular interest in caring for elderly patients who typically have several chronic illnesses, various practitioners, and multiple medications. Based on the positive experiences (i.e., APPE, seminar), the NSU College of Pharmacy will continue supporting interprofessional education in geriatrics. Future studies are being implemented to measure the impact of interprofessional endeavors to assess patient outcomes.

Development and Implementation of a Longitudinal Professionalism Curriculum within a Block-format PharmD program. James D. Scott, Western University of Health Sciences, Anandi V. Law, Western University of Health Sciences, Eunice P. Chung, Western University of Health Sciences, Eric K. Gupta, Western University of Health Sciences, Janice Hoffman, Western University of Health Sciences, Mark Nguyen, Western University of Health Sciences, Emmanuelle Schwartzman, Western University of Health Sciences. Objective: (Background) Professionalism is a highly valued trait of pharmacy graduates but is difficult to teach in a classroom setting. To institute a more natural acquisition of professional attitudes and behaviors, a required Professionalism Curriculum was developed and implemented longitudinally. Methods: (Purpose) A longitudinal Professionalism Curriculum served dual purposes: it attempted to address characteristics of “leadership and confidence” identified by our employer survey as being desirable traits of graduates. It also helped us develop criteria based on professionalism as a personal characteristic that is usually learned and practiced via role modeling. Results: (Design) A curricular task force established in 2009 organized professional activities into five categories: 1-Education; 2-Patient Care; 3-Legislative Advocacy; 4-Leadership; and 5-Philanthropy. During each of the P-1 and P-2 years, students must complete five activities (at least one each from categories 1-3) outside of classroom hours. During the P-3 and P-4 years, their five activities must include one each from
categories 3-5. Students log their activities into E*Value’s MyFolio®, and include a self-reflection. **Implications:** (Lessons Learned) The first class to track through the Professionalism Curriculum was surveyed at the end of their P-1 year, and during their P-3 year (results to be reported). To date, all students have met the requirements of the Professionalism Curriculum. Descriptive results will include the frequency of activities within each category and student perceptions of the professionalism requirements. Modifications have been made based on student feedback and an annual review by the Curriculum Committee.

**Development of Coordinated Interprofessional Education Activities for Health Professions Students from 10 Disciplines using Standardized Patients.** Marieke D. Schoen, University of Illinois at Chicago, Valerie A. Gruss, University of Illinois at Chicago College of Nursing, Mary T. Keehn, University of Illinois at Chicago College of Applied Health Sciences, Elizabeth W. Peterson, University of Illinois at Chicago College of Applied Health Sciences, Annette L. Valenta, University of Illinois at Chicago College of Applied Health Sciences. **Objectives:** Faculty from 10 disciplines developed, implemented and evaluated a 2-day course, Interprofessional Collaboration in Patient Care. Launched in December 2011, the course used a case-based format to develop students’ ability to engage in team-based, patient-focused care. The course featured innovative pedagogies including videotaped clinical scenarios and encounters with the standardized patients (SP) and face-to-face encounters with SPs. Following the interaction with the SP, checklists were completed by both the SP and the students to evaluate students’ performances. **Methods:** Quantitative and qualitative methods comprised the evaluation of the course experience. Pre/post course evaluations assessed ‘attitudes toward interprofessional collaboration’, perceived ‘understanding of professional education and roles’, and ‘readiness for interprofessional learning’. Reliable and valid outcome instruments (e.g., Readiness for Interprofessional Learning Scale) were used. The course evaluation examined student satisfaction with course content and processes. Open-ended questions queried students on workshop’s strengths, benefits and potential for improvement. **Results:** Ratings improved for all students across all scales. The findings indicated that students (n = 30) experienced significant positive change from pre/post course intervention in: “understanding” (p-value: 0.001); “readiness” (one tail test p-value 0.7; with robust error correction: p-value 0.007); and “attitudes” (p-value: 0.03). In written comments, students consistently described the use of diverse learning formats (especially use of SPs) as a strength, and high-lighted the value of learning about diverse professions through didactic, case-based and informal experiences. **Implications:** Students from a variety of health professions can benefit from coordinated activities using multiple learning strategies including SPs.

**Development of Interprofessional Education Across Multiple Campuses of the South Carolina College of Pharmacy.** Elizabeth W. Blake, South Carolina College of Pharmacy, Sarah P. Shrade, South Carolina College of Pharmacy, Kelly R. Ragucci, South Carolina College of Pharmacy. The South Carolina College of Pharmacy (SCCP) implemented a newly revised curriculum for the doctor of pharmacy program beginning fall 2011. As part of the revision, students were required to complete an introductory interprofessional (IP) course during the spring semester of the first year. Although offered on the Medical University of South Carolina (MUSC) campus for three years, this course was the first such offering on the University of South Carolina (USC) campus. Differences in campus structure – one an academic medical center, the other a large liberal arts university – have created different opportunities for IP education implementation. Creating Collaborative Care (C3), a center for IP education on the MUSC campus, coordinates the course for all first year health care professionals, including nursing, medicine, dentistry, pharmacy, and other allied health professions. C3 also provides additional IP opportunities for electives, community service, simulation, and research during all years of health professional training. The IP course was implemented on the USC campus for all first-year pharmacy and medicine students (n = 200) with faculty members volunteering to coordinate and facilitate the course. Content of the course was adjusted to complement the existing medicine curriculum and schedule. Faculty members from nursing, public health, and social work on the USC campus have expressed interest in including their students in the course next year. Expansion of the course to pharmacy and medicine students on the Greenville campus is also in progress. Learning experiences and content shared across the campuses have eased implementation of IP education.

**Development of the Academic Community Team Interdisciplinary Outreach Network (ACTION).** Nathan A. Painter, University of California, San Diego, Sarah E. McBane, University of California, San Diego, Eduardo Fricovsky, University of California, San Diego. The University of California, San Diego Skaggs School of Pharmacy and Pharmaceutical Sciences (UCSD SSPPS) developed ACTION (Academic Community Team Interdisciplinary Outreach Network) to enhance and expand collaboration of pharmacy and medical students. The vision of ACTION is to establish a strong cooperative relationship early within the academic interprofessional community (medical and pharmacy students) with the goal of creating teams capable of better patient outcomes in future health care settings. Other goals include: encouraging communication between healthcare disciplines, establishing a positive and healthy atmosphere to promote interactions between communities, promoting awareness of pharmacy expertise to other health disciplines, and continually seeking new ways in solidifying relationships between medical and pharmacy students. Faculty champions and a committee of motivated students worked to design and implement a diabetes workshop where pharmacy students trained first-year medical students on use of blood glucose meters. Post-training surveys were implemented, and respondents indicated that the workshop was very beneficial for future patient interactions and they enjoyed the interprofessional, collaborative model. With the support of ACTION, UCSD SSPPS also opened its annual immunization training course to medical students. Medical student participation was precluded by scheduling concerns and desire for elective credit. The immunization course has now been approved by the school of medicine as an elective, with anticipation of greater uptake by the students at its next occurrence. ACTION represents a novel example of interprofessional education and outreach.

**Didactic and Experiential Interprofessional, Inter-Institutional Courses at a Private College of Pharmacy.** Gloria Grice, St. Louis College of Pharmacy, Erica F. Pearce, St. Louis College of Pharmacy, Kacie Monson, St. Louis College of Pharmacy, Anastasia Roberts, St. Louis College of Pharmacy, Tricia M. Berry, St. Louis College of Pharmacy, Amy M. Tiemeier, St. Louis College of Pharmacy, Scott M. Vouri, St. Louis College of Pharmacy, Clark Kebodeaux, St. Louis College of Pharmacy, John M. Burke, St. Louis College of Pharmacy, Wendy C. Duncan, St. Louis College of Pharmacy. Despite being independent, St. Louis College of Pharmacy (STLCOP) has successfully created interprofessional courses with three neighboring schools. “Interprofessional Patient Care” – Students participate in a team seminar at Saint Louis University (SLU) as part of the required Introductory Pharmacy Practice Experience in professional year (PY)-3. SLU students enrolled in medicine, nursing, physical therapy, occupational therapy, and physician assistant programs join with STLCOP student...
pharmacists in teams of 12-15. Teams meet six times per academic year and are exposed to case-based patient discussions and standardized patients to develop interprofessional team communication and strategies to improve patient care outcomes. Pre- and post-course assessments of student interprofessionality are done using the Readiness for Interprofessional Learning Scale (RIPLS). “Indigent Populations: Focus on Health Literacy” – This elective course, co-developed and co-coordinated with a physician at Washington University in St. Louis (WUSTL), allows PY-2 and PY-3 students to create collaborative opportunities with students from Goldfarb School of Nursing at Barnes-Jewish College. Students develop competence in interprofessional collaboration, patient-centered care, care coordination, and navigation of the health system. Projects include presentations at a homeless shelter and development of informational brochures. Establishing collaborations has created challenges including developing affiliation agreements, managing differences in schedules, tuition and credit hour allotment, and ensuring adequate student interest in elective offerings. However, much progress has been made including, student pharmacists participation in the Health Professions Student Leadership Council at WUSTL and presentation of joint scholarship projects with SLU. Ongoing conversations between schools continue to explore additional interprofessional activities and courses.

Eliminating Barriers to Interdisciplinary Collaboration. Marsha A. McFalls, Duquesne University, Yvonne Weideman, Duquesne University, School of Nursing, Bonnie S. Dean, Duquesne University, School of Nursing. Ruth Newberry, Duquesne University Computing and Technology Services. Objective: Today’s pharmacy student needs to be prepared to make appropriate decisions for increasingly complex patients in an environment of multiple health care professions. As distances between disciplines continue to grow, it is essential that pharmacy students gain competency in interdisciplinary collaboration and teamwork to ensure the provision of quality care. To facilitate student acquisition of the needed competencies, pharmacy educators must provide students with the opportunity to collaboratively provide patient care with students from other health disciplines. However, barriers such discipline-specific class schedules often usurp shared learning experiences. Methods: Educational technology, like Blackboard™, can effectively unite students and faculty by eliminating logistical barriers. The Schools of Pharmacy and Nursing, separately, already utilized Blackboard for virtual encounters between “patients” (faculty member) and students (playing the role of pharmacist/nurse). Together, the two schools integrated their approach to create a unique virtual learning environment in Blackboard where pharmacy and nursing students provided care to a virtual pregnant patient. A series of video clips were used to focus on teaching points such as use of pregnancy tests and glucometers and identifying/treating problems that may occur during pregnancy. After viewing the videos, students developed care plans, educational pamphlets, and demonstration videos that captured their collaborative effort in the care of the pregnant patient. Results: Ninety-four percent of pharmacy students felt they learned the role of the pharmacist and eighty-seven percent of nursing students felt they learned the role of the pharmacist. Implications: Other pharmacy and nursing educators could easily replicate this virtual learning environment.

Enhancing Interprofessional Abilities in Health Profession Students and Practitioners. Nancy L. DeGuire, University of the Pacific, Sian Carr-Lopez, University of the Pacific, Oby Stan-Ugbene, University of the Pacific, Jenana Halilovic, University of the Pacific, Eric G. Boyce, University of the Pacific. Objective: To describe the design and outcomes associated with interprofessional educational programs designed for health profession students and practitioners. Methods: A health science school provided unique educational opportunities to enhance interprofessional abilities for students and practitioners in pharmacy, physical therapy, speech-language pathology and music therapy. The design, implementation and outcomes of those programs are described. Results: An elective course for students from pharmacy, speech-language pathology, physical therapy and music therapy was developed and implemented by faculty from each of the disciplines. A clinic patient who had health-related issues that required the expertise of the four disciplines was selected for semester-long follow-up by a team of students and practitioners. The semester culminated in each team’s Grand Rounds presentation to an audience of peers. Student evaluations demonstrated a greater understanding and respect for the intricacies of the other disciplines. Faculty evaluations were positive, but elucidated the complexities of coordinating schedules of the students and patients. The Continuing Professional Education (CPE) department embraced the concept and developed an interprofessional CPE program for physical therapists, pharmacists and speech-language pathologists. This program included evaluations and therapeutic planning of simulated cases by interprofessional teams. The CPE program evaluations supported enhanced appreciation for inter-disciplinary partnerships, a greater understanding of discipline-specific assessments, and the benefits of interprofessional teams. Implications: Students and graduates benefit from interprofessional education.

Enhancing Interprofessional Collaboration Among Healthcare Providers Regarding Prescription Abuse and the Prescription Monitoring Program (PMP). Connie L. Smith, The University of Louisiana at Monroe, Candace T. Chelette, The University of Louisiana at Monroe, Michael B. Cockerham, The University of Louisiana at Monroe. Objectives: Due to the increasing incidence of prescription drug abuse and diversion, 37/50 states have implemented a PMP to identify and prevent prescription abuse and misuse. In order to be successful, all members of the healthcare team (prescribers and dispensers) must collaborate and utilize the program. The objectives of this PMP study were to (1) assess dispensers’ knowledge, opinions, and usage, and (2) gather relevant data to be used in continuing education opportunities for all healthcare providers. Methods: Registered pharmacists in Louisiana were invited to participate in an online survey regarding their utilization and perspective of the PMP. The participants were asked to indicate the extent to which they agreed or disagreed with each of the survey items using a 5-point Likert scale. Open-ended questions were included to capture more subjective findings. The survey was created and administered online using createcareer.com. Descriptive statistics were used to analyze the results. Results: Less that half of healthcare providers in Louisiana have access to the PMP. Approximately 77% of dispensers were knowledgeable of PMP, 46% had access with only 17% accessing it daily. Of those that do not have access to the PMP, reasons included “too time consuming”, “not important to my practice”, “a pharmacist I work with has access”, “it is the physicians responsibility”. Based on these findings, current continuing education is being provided. Implications: Educating about the PMP prior to prescribing and dispensing controlled substance prescriptions enhances interprofessional collaboration between healthcare providers and may prevent patients from obtaining frequently abused medications.

Enhancing the Community Educator Program through Interprofessional Engagement. Stacey R. Schneider, Northeast Ohio Medical University, Barbara R. Palmisano, Northeast Ohio Medical University, Margaret B. Sanders, Northeast Ohio Medical University. The
Evaluating Team Dynamics in an Interprofessional Exercise. Celia P. MacDonnell, The University of Rhode Island. Objective: To evaluate the impact of an interprofessional exercise on healthcare students and team dynamics. Methods: A workshop was developed combining second year medical students, senior nursing and P3 pharmacy students to work in an interdisciplinary team with a Standardized Patient (SP) presenting with community acquired pneumonia. The standardized patients and faculty members facilitating the exercise evaluated the student teams using a “teamwork global rating scale” and grading rubric. Results: The faculty and SPs reported that the disciplines equally took part in patient care and demonstrated good team communication. In 78.7% of the encounters, the team worked as a cohesive unit and the patient was comfortable with the care given. All three disciplines were also rated individually on “taking the lead” in a variety of patient care areas. It was noted that while the students worked together to develop a care plan for the patient, both medicine and pharmacy communicated that plan to the patient in 35.13% of the encounters. Nursing accounted for 29.72% of the presentations. Implications: We believe that experiences such as this foster interdisciplinary trust and the necessary communication skills for students to effectively participate as active members of healthcare teams in the future as healthcare providers.

Evaluation of an Intervention to Improve Student Perception of Interdisciplinary Education. Adlia Ebeid, Texas Southern University, Kim L. Pounds, Texas Southern University, Shirlette G. Milton, Texas Southern University. Objective: To evaluate the affect of an interdisciplinary course assignment on first professional year pharmacy students’ perception of interdisciplinary education. Method: A pre-post cross-sectional design to evaluate students’ perception of interdisciplinary education. Students enrolled in an Introductory Pharmacy Practice Experiences Public Health/Service Learning course were required to complete an interview with one of the following health professionals: physician (any discipline) or physician assistant, nurse or nurse practitioner, social worker, therapist (physical, recreational, occupational, speech, respiratory) or health educator. A standardized interview guide was used for the interviews. Both qualitative and quantitative measures were used: (1) written student reflection of their experience and (2) the Interdisciplinary Education Perception Scale (IEPS). Results: A total of 105 students completed the IEPS. The largest difference (0.5) occurred on students’ perceptions of collaborations between pharmacists and other professionals with a 0.5 difference in student response average. Students felt that the assignment increased their awareness of the roles and responsibilities of other health professionals and would positively contribute to their development as pharmacists. Implications: Interviewing health professionals can be a beneficial exercise in introducing students to roles and responsibilities of a variety of health professionals in an effort to improve their interdisciplinary education.

Expanding Interprofessional Education through a Graduation Requirement. Michael A. Crouch, East Tennessee State University, L. Brian Cross, East Tennessee State University, Stacy D. Brown, East Tennessee State University, Larry D. Calhoun, East Tennessee State University, Wilsie S. Bishop, East Tennessee State University. Objective: To describe a growing interprofessional (IP) education program within the Academic Health Sciences Center (AHSC) at East Tennessee State University (ETSU). Methods: The AHSC consists of five colleges: Pharmacy, Medicine, Nursing, Public Health, and Clinical and Rehabilitative Health Sciences. ETSU has a rich history of IP education including a rural health track and numerous required/elective courses. AHSC leadership, including the Vice President of Health Sciences and respective college deans, has collectively endorsed expansion of IP education. To meet this goal, the AHSC established an interprofessional education committee (IPEC) with faculty representation from all five colleges. Results: IPEC has developed and will launch a 24-month pilot program in the fall of 2012. It will include students and faculty members from all five colleges. The program will begin with an orientation to IP education (informative learning) followed by numerous applied experiences (formative learning). Each student will complete four self-selected experiences (courses and/or activities) that focus on individual core competencies of IP collaborative practice: 1) values/ethics, 2) roles/responsibilities, 3) communications, and 4) teams/teamwork. The program will conclude with a team-based, capstone activity facilitating transformative learning. Based on results of the pilot program, the AHSC plans to establish an IP graduation requirement for all professional and graduate students. Implications: The AHSC at ETSU is implementing an IP education pilot program that expands on existing IP activities. The program will address learning on multiple levels and meet core competencies of IP collaborative practice. The pilot will guide development of an IP education graduation requirement.

Finding Business Solutions to Walmart Pharmacy Dilemma: A Pharmacy and Graduate Business School Collaboration Model. Fadi M. Alkhateeb, University of Charleston, Megan Hedrick, University of Charleston Graduate School of Business, Zhiyong Liu, University of Charleston Graduate School of Business, Nora Myers, University of Charleston Graduate School of Business. Objectives: In 2009, Walmart opened full service its first pharmacy on a college campus at the University of Charleston (UC) School of Pharmacy Building. Since opening at UC, Walmart pharmacy has been striving to increase patient volume. UC directed a study to analyze possible marketing strategies in order to increase utilization and profit margins at this flagship pharmacy. Methods: Two Graduate School of Business students, together with their respective advisors from Pharmacy and Business Schools, collaborated to create a viable business plan. Hard copy surveys were given to 30 customers who filled their prescriptions at the pharmacy, and another online survey was sent to 644 UC students.
Results: All customers agreed to complete the first survey 100%. A total of 178 responses were received for the second survey yielding a response rate of 27.6%. Of the 30 customers who filled out the survey, 100% reported that they would fill future prescriptions at the UC Walmart pharmacy. On the online survey, 90.4% of the student respondents at UC were aware of the Walmart Pharmacy on campus. However, and only 30% of UC student respondents fill their prescriptions there. Implications: The team recommended moving the Walmart Pharmacy from the Pharmacy Building to a location with greater student traffic, the Geary Student Union, and to create a small retail store to accompany the pharmacy. By keeping the pharmacy on campus but relocating it, all stakeholders will benefit. This study provides insight for pharmacy programs wanting to implement a similar model on their campuses.

For the Body is Not One Member, But Many... Lindsay S. Elliott, Harding University, Julie A. Hixson-Wallace, Harding University. Objective: Obtain baseline quantification of interprofessional (IP) learning and collaborative practice occurring in didactic and experiential education following university reorganization of the health sciences. Methods: Faculty was polled regarding IP learning and collaborative practice occurring in didactic and experiential curriculum. Didactic activities include pharmacy faculty teaching pharmacology to physician assistant (PA) and physical therapy (PT) students, PA faculty, with PA students and pharmacy faculty, teaching patient assessment to pharmacy students, PT faculty teaching components of pathophysiology, pharmacogenomics, and cadaver lab to Pharmacy students, and pharmacy and PA students taking anatomy and physiology and Christian bioethics courses together. Experiential activities include introductory pharmacy practice experience (IPPE) students collaborating with nursing students in wellness fairs, communication sciences and disorders faculty collaborating with pharmacy students for cognition screening and filling patients’ pillboxes, pharmacy students interacting with physicians, nurses, dentists, and PAs at pharmacy and dental charitable clinics, and PA students immunizing alongside pharmacy faculty and students in flu clinics. Advanced pharmacy practice experience (APPE) students complete patient home visits with nursing and physical therapy teams, provide continuing education programs for physicians, nurses, and pharmacists, and are co-precepted by non-pharmacist health care providers with whom they interact daily to resolve potential medication related problems. Results and Implications: Interprofessional activities are occurring and exposing students to the perspectives of all members of the healthcare team. Collaboration is promoted amongst the healthcare system with the goal of improving patient care. Follow-up assessment will determine the extent to which university health sciences reorganization affected interprofessional activities.

Geriatric and Pediatric Practice Site Readiness for Interprofessional Education: A Pilot Study. Joseph A. Zorek, Texas Tech University Health Sciences Center, Amie T. Blaszczyn, Texas Tech University Health Sciences Center, Mark R. Haase, Texas Tech University Health Sciences Center, Cynthia L. Raehl, Texas Tech University Health Sciences Center. Objective: To assess the readiness of required geriatric and pediatric advanced pharmacy practice experience (APPE) sites for interprofessional education (IPE). Methods: A 30-item instrument based on the Interprofessional Education Collaborative (IPEC) core competencies for interprofessional collaborative practice (IPCP) was administered to geriatric and pediatric APPE preceptors to assess the interprofessional identity of their practice sites, and hence their capacity for IPE. Items assessed practice site characteristics, team dynamics, and the preceptor’s overall impression of their practice. Results: Preliminary data from 10 of 33 preceptors (median years precepting: 5.3; median students precepted annually: 16) showed that all practice sites train other health care professional students (nursing 100%, medical 50%, social work 40%, occupational therapy 30%, and physical therapy 30%). One-half of preceptors reported frequently meeting IPEC core competencies related to shared team accountability for patient outcomes and optimal use of team members’ complementary skill sets. Ten percent of preceptors reported that their team frequently communicated each member’s role and responsibilities clearly and utilized evidence to inform team-based practice. Sixty percent of preceptors reported that their practice met the definition of interprofessionality. No substantial differences were noted among geriatric and pediatric APPE sites. Implications: The required geriatric and pediatric APPE sites assessed in this pilot study are a rich resource for expanding IPE as all are used to train other health care professional students and most are already interprofessional in nature. Preliminary data suggest that this instrument may also be useful in identifying areas needing interprofessional development prior to implementation of IPE initiatives.

H x H: Health Humanities and Interprofessional Training in the Health Sciences. Paul M. Lewis, University of the Incarnate Word, Arcelia M. Johnson-Fannin, University of the Incarnate Word. Practitioners, educators, and researchers in pharmacy face many of the challenges confronting other healthcare professionals. Increasingly specialized fields of knowledge and technique have expanded the working distance between these professions, even while evidence seems to be emerging that interprofessional cooperation may well improve clinical outcomes. In light of these developments, some colleges of medicine, pharmacy, nursing, and others in the allied health sciences are beginning to train and work more closely together as teams. Beyond the direct practical benefits anticipated from this shift toward interprofessional cooperation among health scientists and practitioners, there is also an opportunity to search for a common foundation of purpose and meaning beneath the apparent diversity of their respective specializations. There is an opportunity to examine anew what it means to be a pharmacist, a physician, a nutritionist, and so on. At the University of the Incarnate Word (UIW), the Feik School of Pharmacy (FSOP) has begun to address both the practical and philosophical concerns of interprofessionality by reaching beyond the sphere of the health sciences and into the humanities. In May 2012, deans and faculty from five professional programs—pharmacy, nursing, physical therapy, nutrition, and optometry—will participate in a summer health humanities workshop, directed by faculty at UIW. Incorporating the work and thought of philosophers, historians, theologians, and literary scholars, the workshop will challenge health science educators to consider how they might think together as they endeavor to work together. Our poster will present the design, content, and outcomes of this workshop.

Health Care Challenge Competition: Fostering Interprofessional Education While Enhancing the Care of an Underserved Population. Chasity M. Shelton, The University of Tennessee, Alicia M. Dorsey, The University of Tennessee Health Science Center, Bradley A. Boucher, The University of Tennessee, Stephanie A. Connelly, The University of Tennessee Health Science Center, Peg T. Hartig, The University of Tennessee Health Science Center, Leslie M. McKeon, The University of Tennessee Health Science Center, Cesar A. Migliorati, The University of Tennessee Health Science Center, Patricia M. Speck, The University of Tennessee Health Science Center. Objective: To implement interprofessional education (IPE) learning activities for students of the University of Tennessee Health Science Center
Highlights of Interprofessional Education (IPE) at Roosevelt University College of Pharmacy (RUCOP). Amusa S. Adebayo, Roosevelt University, Lawrence A. Potempa, Roosevelt University, Fatima M. Ali, Roosevelt University, Tonya Crawford, Roosevelt University, Sam Rasty, Roosevelt University, Christianah M. Adeyeye, Roosevelt University, Randall Lambert, Roosevelt University, John Maxwell, Roosevelt University, Bud Beatty, Roosevelt University, George E. MacKinnon, Roosevelt University. Objective: The need for interdisciplinary approaches to ensure patient safety and to optimize therapeutic outcomes has fostered interest in inter-professional education at RUCOP. Methods: Through an innovative curriculum design, including team-based education, students are introduced to “real world practice” with IPPEs (320 hours) beginning in the first year of the three-year PharmD program. The second year curriculum includes two terms (160 hours) of IPE, whereby students are assigned to complete rotations with other health care providers in the delivery of patient-focused care in four core areas: home health/long-term care/hospice; convenient care clinics/urgent care; federally qualified health centers/free clinics for medically underserved; and other healthcare providers/sites. These IPEs emphasize the significance of the synergy created by interdisciplinary teams and the role of pharmacotherapy in various practice models that focus on patient-centered care and collaboration among health care professionals. Each experiential Friday has an assignment directed by didactic course coordinators to connect experiential and didactic education over each ten-week term. In didactic courses, enhancement of student learning is made possible by team building (within structured cohort groups) and introducing simulations so students can develop their skills in translating pertinent knowledge and skills to design safe and effective therapies. Results and Implications: The inaugural PharmD class is being introduced to the concept of interprofessionalism both in didactic and experiential courses. Numerous student group presentations in clinical, and biopharmaceutical sciences plus feedback received from IPPE preceptors indicate that students are effectively able to incorporate core competencies as part of their professional development.

Improvement of Patient Care in an Interprofessional Patient-Centered Medical Home Practice. LaKeisha G. Williams, Xavier University of Louisiana, Mary T. Coleman, Louisiana State University Health Sciences Center, Kathleen B. Kennedy, Xavier University of Louisiana. In the Patient-Centered Medical Home (PCMH) practice, the pharmacist can optimize therapeutic outcomes and collaborate with other healthcare professionals to assess and address the health care needs of the patients served. Experiential training in these interdisciplinary settings provides a positive impact on interprofessional learning and patient care. In an effort to address this role, Xavier University of Louisiana, College of Pharmacy has collaborated with Louisiana State University Health Sciences Center in implementing a PCMH program that provides comprehensive care to diabetic patients. The purpose of the program is to introduce fourth year pharmacy students to the PCMH model, and facilitate a team-based approach in the improvement and health maintenance of diabetic patients. The target population of the program involves seventy-five diabetic patients in an inner-city ambulatory care clinic, who have a hemoglobin A1c greater than 9.0. The clinical pharmacist precepts the pharmacy students in providing medication therapy management services, personalized care plans for patient self-management, references to cost-effective medication resources and pharmacotherapeutic recommendations to the patients and healthcare team. Pharmacy students, along with community nursing students, second year medical students, social work interns and medical residents participate in team meetings to review patient quality indicators, and develop strategies to meet patient target goals related to those indicators. Upon completion of the rotation, pharmacy students will be able to embrace cultural diversity in health care settings, and deliver efficient, patient centered care as a member of an interdisciplinary team.

Incorporating Interprofessional Teaching Methods for Doctor of Pharmacy, Physician Assistant, and Emergency Medical Services Students. William M. Maidhof, St. John’s University, Stacey L. Singer-Leshinsky, St. John’s University, Danielle M. Kruger, St. John’s University, Pamela J. Gregory-Fernandez, St. John’s University, Sandra Beysolow, St. John’s University, Scott C. Holliday, St. John’s University, Frank Riboni, St. John’s University, Candace J. Smith, St. John’s University, Wenchen Wu, St. John’s University. Objective: To incorporate interprofessional teaching methods utilizing Doctor of Pharmacy, Physician Assistant (PA), and Emergency Medical Services (EMS) faculty in didactic, simulation, and experiential environments. Methods: Doctor of Pharmacy, PA, and EMS faculty met to design how to provide interprofessional teaching in didactic, simulation, and experiential environments. Results: Doctor of Pharmacy faculty educated PA students on various pharmacotherapeutic topics through didactic lecturing in the classroom and at experiential sites, as part of a multidisciplinary healthcare team. Utilizing Human Patient Simulation (HPS), Doctor of Pharmacy faculty collaborated with PA faculty to develop simulated cases to teach PA students the treatment of anaphylactic reactions and advanced cardiac life support (ACLS). These simulated cases were designed to build and improve upon the skill-sets of physical examination, diagnosis and treatment, communication, and critical thinking. In addition to working with Doctor of Pharmacy faculty in these areas, PA faculty served as instructors in the pharmacy laboratory curriculum. Physician Assistant faculty provided didactic lectures focused on physical assessment and utilized HPS to teach Doctor of Pharmacy students diagnostic and auscultation techniques. Additionally, Doctor of Pharmacy faculty collaborated with
EMS faculty to develop cases utilizing HPS to educate EMS students on the treatment of cardiac emergencies. All PA and EMS-centered HPS exercises were concluded with a debriefing session and a review of key points. Implications: Curricular areas where interprofessional teaching methods are currently incorporated will be evaluated; further inclusion of multidisciplinary education is currently being discussed within the college.

Inroads into IPE: Progress at ACPSH. Sarah L. Scarpace, Albany College of Pharmacy and Health Sciences, Michael R. Brodeur, Albany College of Pharmacy and Health Sciences, Carmen Mojica, Albany College of Pharmacy and Health Sciences, Katie Cardone, Albany College of Pharmacy and Health Sciences, Robert DiCenzo, Albany College of Pharmacy and Health Sciences, HaiAn Zheng, Albany College of Pharmacy and Health Sciences. Objective: To describe the progress that Albany College of Pharmacy and Health Sciences has made with interprofessional education. Methods: Through didactic, simulated, experiential, community service, and research opportunities, ACPSH has engaged in IPE. In each setting, faculty describe how the IPE project was designed and implemented, and report on the specific IPEC domains met by the activity. Results: Each of the 4 domains of the IPEC were met through these activities. In all cases, these were the first institutional experiences with IPE with the goal of building working relationships with other professional schools. The didactic course included students in pharmacy, nursing, medicine, and health law. The simulated experience included a pharmacy practice faculty member and 2 pharmacy students participating in a geriatric polypharmacy “teaching day” using simulated patients at the local medical school. 3 community service projects focused on direct patient care with pharmacy and medical students. A research proposal was developed and submitted with collaborators from medicine and pharmacy and a second research series included an interdisciplinary program with MSPS and PharmD students. Overall, a small number of pharmacy students were able to participate in these initial projects. Implications: As an independent school of pharmacy without other partners for IPE within the institution, our methods for implementing IPE may be useful to similar schools. Our focus for the upcoming academic year will be on expansion of existing programs and identification of additional opportunities.

Inroads to Interprofessional Education. Katherine A. Kelley, The Ohio State University, James D. Coyle, The Ohio State University, Stuart J. Beatty, The Ohio State University, Carolyn C. Brackett, The Ohio State University, Julie E. Legg, The Ohio State University. Given the current complexity of the healthcare environment, there is growing recognition of the importance of interprofessional education to train students to effectively work in interdisciplinary teams. The Ohio State University College of Pharmacy is currently participating in three interprofessional educational activities involving students and faculty from medical dietetics, medicine, nursing, pharmacy, physical therapy, respiratory therapy, and social work. The first activity focuses on adherence. Medicine (M2) and pharmacy students (P1, P2, P3) prepare, dispense, counsel, and take a complex placebo medication regimen and then discuss adherence in interdisciplinary groups. The second activity involves a simulated cardiac code situation using high fidelity mannequins. Baccalaureate nursing and P3 students experience the challenges of providing care in a code situation together. The third activity is an elective course involving students from all seven healthcare disciplines. Students explore the scope of practice of each discipline, examine the benefits and challenges of delivering healthcare using interdisciplinary teams, and engage in case-based problem solving. These three activities have given College of Pharmacy faculty and students the opportunity to engage with colleagues in other health sciences colleges as well as to experience firsthand the barriers and rewards to interprofessional educational in our curriculum. These experiences will aid in the future refinement and development of additional interprofessional experiences for the health sciences professions at Ohio State.

Integrating Interprofessional Education: The UNMC Experience. Dean S. Collier, University of Nebraska Medical Center, Gary C. Yee, University of Nebraska Medical Center, Devin R. Nickol, University of Nebraska Medical Center College of Medicine, Paul M. Paulman, University of Nebraska Medical Center College of Medicine, Ruth N. Margalit, University of Nebraska Medical Center College of Public Health, Margaret J. Winnicki, University of Nebraska Medical Center College of Allied Health Professions, Catherine A. Bevil, University of Nebraska Medical Center College of Nursing, Rebecca L. Keating-Leffer, University of Nebraska Medical Center College of Nursing. The University of Nebraska Medical Center (UNMC) campus is home to Colleges of Pharmacy, Nursing, Medicine, Public Health and School of Allied Health Professions and a tertiary teaching hospital, The Nebraska Medical Center. An affiliated College of Dentistry and second College of Nursing are located 45 miles away. UNMC introduced Interprofessional Education (IPE) to incoming students in 2008, initially as an optional, afternoon session. Subsequently, the single event was improved upon and eventually expanded to include two, required, first-year events. Healthcare quality improvement topics relevant to all professions were selected as event themes. Goals and objectives focused on key IPE principles; professionalism, communication, and teamwork. Each event usually consisted of a large group session and a small group active learning session. Participants were asked to complete a pre/post survey (Readiness for Interprofessional Learning, RIPLS) and a post-session questionnaire. Based on the success of these events, a formal centralized structure and oversight of IPE evolved at UNMC. Ownership and coordination of all IPE events and IPE learning opportunities transitioned from an ad hoc group of interested faculty volunteers to a formal IPE curriculum committee with a separate evaluation subcommittee. In 2011, a campus office for Interprofessional Education was created with recruitment of an Assistant Dean. Future plans for IPE at UNMC include continuation of the two first-year events with evaluation of outcomes using a newly developed survey instrument, creation of an inventory of all IPE learning opportunities on campus, and adoption of requisite IPE exposure for each profession.

Integrating Interprofessionalism in the Development of New School of Pharmacy at Cedarville University. Elisha R. Injeti, Cedarville University, Douglas C. Anderson, Cedarville University, Aleda M. Chen, Cedarville University, Rebecca J. Gryka, Cedarville University, Marc A. Sweeney, Cedarville University. Cedarville University has been offering undergraduate education in pre-pharmacy and nursing for more than 30 years. Current development of graduate and professional programs in health sciences began as a result of University’s strategic plan. From the early stages of developing Doctor of Pharmacy (PharmD) program, the School of Pharmacy was intentional in its mission to create a culture of interprofessionalism. Initially, didactics, simulation labs, experiential education and research were identified as four major areas to inculcate interprofessionalism in the new School of Pharmacy. Development of didactic curriculum and its delivery in the PharmD program included insights from pharmacy, nursing and medical school faculty. As a result, the new PharmD curriculum applies a combination of problem and team based learning methods developed in consultation with Wright State University.
School of Medicine. The simulation lab was designed to facilitate interaction between pharmacy and nursing students in working together under the supervision of joint faculty. Similar interprofessional teams lead by pharmacy faculty has been on international medical missions that provided valuable experiential education to the students. Under research initiatives, the School of Pharmacy successfully launched monthly research grand rounds with the Nursing department and annual research and scholarship symposium with all the colleges in Cedarville University. Further, the School of Pharmacy provides leadership to the annual Bioethics conference on campus. As a result of these initiatives, the PharmD program at Cedarville University School of Pharmacy will prepare future pharmacists to work efficiently in collaboration with other professionals in the health-care team.

Integrating a New College of Pharmacy into Interprofessional Education at a Multidiscipline University. Matthew M. Lacroix, University of New England, M. Lisa Pagnucco, University of New England, Meghan K. Sullivan, University of New England, Erin R. Koepf, University of New England, Paige Parsons, University of New England, Cory R. Theberge, University of New England, Kevin L. Wallace, University of New England, Curt R. Cyr, University of New England, Kenneth L. McCall, III, University of New England. Students and faculty at the University of New England (UNE) are actively engaged in various interprofessional education (IPE) experiences. UNE is a healthcare focused institution founded in liberal arts. UNE offers many health-related programs, providing students the opportunity to foster interprofessional connections. The Interprofessional Education Collaborative (IPEC) at UNE, now in its 10th year, has welcomed the College of Pharmacy to its initiatives revolving around curriculum development and externally serving in the community. To encourage and promote IPE within the curriculum, UPEC sponsors a scheduled educational series throughout the academic year. As an early introduction to IPE, all incoming students of health professions participate in a patient-centered exercise as part of scheduled orientation activities. In addition, IPEC coordinates an annual spring symposium and case conference to augment IPE education and competencies. IPEC encourages research through participation in University Research Days. College of Pharmacy faculty has been actively involved in the design, development and early implementation of IPE initiatives. Nursing students with the designation of “Master Blood Pressure Trainer”, support pharmacy faculty in training pharmacy students in our patient assessment course. Third year pharmacy students, in the Advanced Practice Lab, were introduced to the Physician Assistant Interprofessional Geriatric Education Program (IGEP), working with patients in the community. The college of pharmacy is also working actively beyond the campus providing interprofessional experiences. The University Global Health Initiative sends teams internationally to help underserved populations. Locally, student organizations partner with social service groups to provide medical care for those in need.

Integration of Interprofessional Simulation to Enhance Communication among Professional Students Caring for the Critically Ill. Heather B. Congdon, University of Maryland, Jeffrey P. Gonzales, University of Maryland. Objective: Evaluate the impact of an interprofessional course utilizing high fidelity simulation on student self-reported ability to identify patient problems, assess patient severity, and communicate within an interprofessional team. Methods: A course involving pharmacy, nursing, social work, and respiratory therapy was implemented in fall 2011 and utilized high fidelity simulation in an attempt to enhance communication skills amongst the professions regarding the care of critically ill patients. An IRB approved survey was administered to students on the first and last day of class. Students ranked their ability to perform tasks regarding problem identification, illness severity assessment, and communication skills for three critically ill patient case scenarios. The rating scale was 1-6; 1 represented the least confidence/ability to perform the specified task and 6 represented the most confidence/ability to perform the task. Results were analyzed through Chi-square statistics. Results: 15 students enrolled for the class (6 pharmacy, 6 nursing, 3 social work). 14 students completed the pre-class survey and 11 students completed the post-class survey. There was a significant improvement in student perceived patient problem identification (p = 0.03). Student perception of communication ability with each of the professions also improved significantly (p = 0.004 for communicating with respiratory therapists; p = 0.01 for social workers; p = 0.002 for nurses and p = 0.002 for pharmacists). Implications: A pilot interprofessional course using high fidelity simulation to teach critical care patient management principles significantly enhanced problem identification and communication amongst the professions involved. Further utilization of this survey in future offerings of this class is needed to ensure validity and reliability.

Interprofessional Team Approach to Palliative Care: An Unique Experiential Education Opportunity in a Hospice System. Ronnie J. Moore, Touro College of Pharmacy-New York, Dipan B. Ray, Touro College of Pharmacy-New York, Stuart Feldman, Touro College of Pharmacy-New York, Sonni Mun, Visiting Nurse Service of New York, Nathan Boucher, Visiting Nurse Service of New York, Daniel Cogan, Visiting Nurse Service of New York. Experiential Education at Touro College of Pharmacy focuses on enhancing students’ educational growth and their professional development through an inter-professional one month APPE elective in hospice care for both P3 and P4 students. Experiential education developed a clinical affiliation with Visiting Nurse Services of NY to add pharmacy students as a part of their interprofessional core team of practitioners to provide medication management to patients’ palliative care. The program is designed to enable students to develop fundamental skills and knowledge in preparation for improving care at the end of life. The Visiting Nurse Service recently opened The Haven which is a 25-bed hospice unit at Bellevue Hospital Center in Manhattan, NY. The patient care teams consists of nurses, nurse practitioners, spiritual counselors, social workers, patient volunteer coordinators, quality improvement personnel, physician assistants, the medical director and 24 hr on call physicians. Students were supervised by the site Medical Director and Nurse Practitioner during their practice experience. Students participated in activities that include collaborating with hospice team members to manage pharmacotherapy and acting as a resource to help patients get nonstandard dosage forms including those that must be compounded (concentrated sublingual solutions, topical medications, etc). During the practice experience, students are asked to present in-service presentations and develop clinical materials on pharmacologic topics from rounds and/or request from the healthcare team. These topics included the conversion of pain medication, conversion from IV to PO or topical dosage forms, antibiotic selection based on patients’ condition; all presentations include a cost analysis component.

Interdisciplinary Medical Missions: An Opportunity for Interprofessional Education. Jeremy R. Fox, Shenandoah University. Annual medical mission trips are commonplace amongst health professions, especially in academic settings. At Shenandoah University, students from the pharmacy, physician assistant (PA), and physical therapy (PT) programs are given the opportunity to participate in a 1-week interdisciplinary mission trip to Leon, Nicaragua. Preparation for the mission requires an eight month process necessitating student and
Interprofessional Advanced Practice Ambulatory Care Rotation Serving Vulnerable Populations. Michel B. Disco, The University of New Mexico College of Pharmacy, Cynthia L. Ardell, The University of New Mexico School of Medicine, Betsy VanLeit, The University of New Mexico School of Medicine. Objectives: To positively impact attitudes, abilities and intentions to practice with underserved populations and to develop interprofessional education and practice as a tool to achieve improved outcomes for patients with complex health conditions and challenging life circumstances. Methods: Develop and maintain an interprofessional patient-centered care advanced practice rotation for final year Doctor of Pharmacy and Medical students: Student teams provide care for patients in non-medical respite beds in shelters for men experiencing homelessness in Albuquerque. Providers round with the students. Students participate in various street outreach and clinics for underserved populations, providing service learning opportunities. Health Science Center and community partners include Albuquerque HealthCare for the Homeless, Albuquerque Police Department, Albuquerque Public Schools, NM Department of Health, shelters for women and families as well as the shelters for men experiencing homelessness. Students attend interprofessional seminars on social determinants, ethics, law, global health, substance abuse and de-escalation training. These are taught by HSC faculty and community partners. Students interact as interprofessional teams whether seeing patients or on outreach. They learn to use resources to help this vulnerable population. The teams meet weekly for case review and reflective sessions. Results: Vulnerable patients receive care and resources for better health outcomes. Students learn how to be effective in an interprofessional team. Students retain altruism. Implications: The impact on the community has been positive. Students like working in the interprofessional team. Expansion of this rotation has begun to reach more students to eventually make a change in practice.

Interprofessional Ambulatory Care Clerkship Experience: A Medical and Pharmacy Student Collaborative Approach to Patient Care. Gladys G. Dueñas, University of the Sciences Philadelphia College of Pharmacy, Anna Headly, Cooper University Hospital, Dyanne P. Westerberg, Cooper University Hospital, Quinna A. Czonskowski, University of the Sciences Philadelphia College of Pharmacy, Lawrence S. Weisberg, Cooper Medical School of Rowan University, Vijaykumar K. Rajput, Cooper Medical School of Rowan University, Cindi Hasit, Cooper Medical School of Rowan University, Michael E. Goldberg, Cooper Medical School of Rowan University, Diane W. Morel, University of the Sciences Philadelphia College of Pharmacy, Michael J. Cawley, University of the Sciences Philadelphia College of Pharmacy, Cathy Y. Poon, University of the Sciences Philadelphia College of Pharmacy. Philadelphia College of Pharmacy and Cooper Medical School form a collaborative practice initiative in developing an interprofessional ambulatory clerkship experience to deliver patient care for the residents of Camden, New Jersey. The objective is to describe the design of this longitudinal outpatient experience which adopts the core competency domains: values/ethics for Interprofessional Education (IPE), roles/responsibilities, interprofessional communication, and teamwork for the delivery of optimal patient care. Fifty first year medical (M1) students and 25 first year pharmacy (P1) students will be divided into teams, in a 2 to 1 ratio. All teams will participate in a 1-hour weekly class focusing on reinforcement of practical knowledge and skills followed by small group faculty facilitated session for team-led patient case presentations. At the end of class, teams will be expected to travel to their assigned outpatient setting. Fifty percent of the team's time will be spent working in the student run clinic where they will work to establish a team-based approach to patient care and develop practice management/patient advocacy skills. The remainder of this longitudinal experience requires the teams to rotate among the following sites: community pharmacies, pediatric clinic, continuing care retirement community, Planned Parenthood office, Charity Care Services office, and private primary care clinics throughout the year. Additionally, these outpatient sites are staffed with fourth professional year pharmacy and medical students serving as role models and mentors for the P1 and M1 students. Future plans include expanding the clinic facilities, increasing clinic time and adding other allied health care professional students.

Interprofessional Education Activities Delivered via a Collaborative Health Science Alliance. Debra K. Farver, South Dakota State University, James R. Clem, South Dakota State University, Dennis D. Hedge, South Dakota State University. The College of Pharmacy at South Dakota State University (SDSU) has collaborated with healthcare professions in several interprofessional education (IPE) activities. The College has worked with the College of Nursing at SDSU and health science programs at the University of South Dakota. IPE activities were accomplished through didactic training, experiential activities and research projects with P3 and P4 students. Other health professions involved were: medicine, physician’s assistants, nursing, occupational therapy, physical therapy, social work, alcohol and drug studies counselors, speech language pathology and audiology, dental hygiene, health services administration and medical laboratory science. The didactic activity included breakout/hands on sessions with experienced first responders and emergency medicine personnel to improve knowledge and skills in working with impromptu interprofessional teams in emergency preparedness. Students could also join the Statewide Emergency Registry of Volunteers program after completing the training. The experiential activity had students work as an interprofessional team to identify a patient’s primary problems and develop recommendations to improve patient care. A faculty member emulated a real life situation by role playing with the team and debriefed the teams concerning their findings. The research project involved a student-led IPE project focused on under-served patients with diabetes. The goal of the project was to improve overall diabetes care and to educate various healthcare professions on each other’s role. A distance of 1 1/2 miles separates the two universities but did not hinder the collaborative effort of IPE due to commitment from administration, coordination with faculty and students and utilization of technology for communication.
Interprofessional Education Initiatives at the University of Connecticut. Devra Khanh Dang, University of Connecticut. Objective: Providing patient-centered and population-based care, effective interprofessional communication and collaboration, and promoting wellness and disease prevention are all part of the CAPE Educational Outcomes. Two major interprofessional education initiatives at UConn School of Pharmacy were specifically designed toward meeting these goals. Methods: The Urban Service Track is a unique curricular collaboration designed to produce future health care professionals (pharmacy, medical, dental, nursing, physician assistant, social work) dedicated to caring for urban underserved populations as well as interprofessional collaboration. This innovative program is built around 11 competencies that include: multiple constituencies, population health, resource constraints, cultural and linguistic differences, and interprofessional teamwork and leadership. Mastery of these competencies is accomplished via learning retreats, community-based clinical and educational outreach activities, and advocacy and research projects, all of which are interprofessional in nature. This is an “add-on” curricular track that runs concurrently to the main curriculum within the six schools, including selected P2 through P4 students. Additionally, for the entire P3 class, opportunities are available to participate in migrant farm worker and homeless shelter clinics, or a similar community engagement activity. During each, pharmacy students collaborate with other health profession students and clinicians to learn patient assessment and health communication skills, cultural sensitivity, and the unique needs of underserved patients in multiple settings. Results: Ongoing program assessment revealed that participation in these experiences increase students’ intentions and ability to work in interprofessional teams and with vulnerable populations. Implications: These programs provide students with unique interprofessional experiences not otherwise available in the curriculum.

Interprofessional Education Initiatives at the Virginia Commonwealth University School of Pharmacy. Brigitte L. Sicat, Virginia Commonwealth University, Jeffrey C. Delafuente, Virginia Commonwealth University, Sallie D. Mayer, Virginia Commonwealth University, Patricia W. Slattum, Virginia Commonwealth University, J. Tyler Stevens, Virginia Commonwealth University. Objectives: ACPE and other organizations advocate that schools of pharmacy should develop and evaluate interprofessional education (IPE) and practice opportunities to prepare graduates to work in collaborative health care teams. VCU recently released an updated strategic plan emphasizing IPE. Our objective is to describe IPE activities at our school including structure, processes, desired outcomes, and assessment methods. Methods: An 11-item questionnaire for faculty was used to identify current and planned IPE activities. Questions were designed to identify the nature of IPE activities, disciplines involved, duration, frequency, setting, desired outcomes, and assessment methods. Results: The survey indentified a variety of structured IPE initiatives. Settings include several high-fidelity simulation laboratories, a free clinic, a retirement community, and a primary care clinic. The majority of IPE initiatives occur during APPEs, although early student pharmacists are also involved in some initiatives. Disciplines involved include students from medicine, nursing, pharmacology, gerontology and medically-trained interpreter students. The duration of activities ranges from one hour to one semester. Assessments incorporate reflections, patient and student satisfaction tools, 360 evaluations, teamwork evaluations, focus groups, and student attitudes towards IPE and community service surveys. Future activities include a service learning IPPE for 3rd year student pharmacists with nursing and medical students providing wellness clinic programs for the elderly, additional simulation laboratories, and fourth year student pharmacists with nursing, social work, and allied health students working collaboratively on virtual patient cases. Implications: The results of this evaluation will be used to consider a more systematic approach to developing and evaluating IPE.

Interprofessional Education at the USC School of Pharmacy: Lessons Learned, Barriers, and Future Trajectory. Kathleen H. Besinque, University of Southern California, Melissa J. Durham, University of Southern California, Bradley R. Williams, University of Southern California, Steven W. Chen, University of Southern California, Susie H. Park, University of Southern California, R. Pete Vanderveen, University of Southern California. Objectives: To describe educational initiatives and innovations in Interprofessional Education (IPE) at the USC School of Pharmacy. Methods: Descriptions of current efforts in IPE were collected from faculty, students, and members of the Health Sciences IPE committee and summarized for presentation. Successes, barriers, and future plans for IPE are highlighted. Results: Interprofessional education within the Health Sciences at USC has grown significantly to include over a dozen initiatives. Pharmacy has implemented IPE innovations during all four years of the PharmD curriculum in a wide variety of settings, including clinical practice sites, classroom case conferences, and community outreach. Additionally, a number of student-initiated extracurricular interprofessional collaborations have been established. Primary barriers during implementation of existing experiences and to their expansion included scheduling conflicts, alignment of curricular content between disciplines, space, and lack of funding to support the IPE infrastructure. Strides have been made at the faculty/administrative level to establish infrastructure that facilitates communication and collaboration between disciplines, including a campus-wide IPE Committee and an IPE website. Future initiatives include 1) expansion of IPE case conferences, 2) interdisciplinary panel discussions, 3) an “Interprofessional Day,” and 4) IPE OSCEs with standardized patients. Implications: IPE initiatives and innovations can be incorporated successfully in all levels of a PharmD curriculum and in a variety of settings. Administrative, faculty, and student buy-in and support are essential to success. At USC, a Center for IPE for the health professions has been proposed as a solution to overcoming the barriers faced such as logistics and managing communication.

Interprofessional Education in Didactic and Experiential Settings at the Jefferson School of Pharmacy. Elena M. Umland, Jefferson School of Pharmacy at Thomas Jefferson University, Cynthia A. Sanoski, Jefferson School of Pharmacy at Thomas Jefferson University, Emily R. Hajjar, Jefferson School of Pharmacy at Thomas Jefferson University, Bhavik Shah, Jefferson School of Pharmacy at Thomas Jefferson University. Objective: To evaluate the various interprofessional education (IPE) offerings at a new school of pharmacy at a large academic medical center. Methods: The pharmacy curriculum was surveyed from Fall 2008 through Spring 2012 to: 1) identify and categorize IPE offerings in both didactic and experiential courses; 2) quantify the number of students participating in these offerings; and 3) evaluate the assessment methods employed for these offerings. Results: The IPE offerings were delivered as a component of introductory pharmacy practice experiences (Discharge Planning symposium, End-of-Life symposium, Geriatric Falls clinic), advanced pharmacy practice experiences (Direct-to-Consumer Advertising symposium, Geriatric Falls clinic, Patient Safety symposium), or required or elective courses (Health Mentor Curriculum and Interdisciplinary Care Planning courses, respectively). The approximate number of students participating in these programs over the past four academic years is as follows: Discharge Planning symposium = 15; End-of-Life symposium = 5; 122
Interprofessional Education, Research and Practice at the University of Washington: A Shared Learning Experience. Nanci L. Murphy, University of Washington, Brenda K. Zierler, University of Washington School of Nursing, Peggy S. Odegard, University of Washington, Stanley S. Weber, University of Washington, Karan N. Dawson, University of Washington, Colleen A. Catalano, University of Washington, Jennifer M. Danielson, University of Washington, Colleen A. Catalano, University of Washington, Skye A. McKennon, University of Washington, Teresa O’Sullivan, University of Washington, Dana P. Hammer, University of Washington, Lynne Robins, University of Washington School of Medicine, Jan D. Carline, University of Washington School of Medicine, Pamela H. Mitchell, University of Washington School of Nursing. The University of Washington (UW) is nationally recognized for its innovations in interprofessional education, research, and practice. The success of these endeavors is due to various factors but is strengthened by a collaborative group of faculty, staff, and students and strong partnerships/affiliations with the community. Since its inception in 2000, the UW Center for Health Science Interprofessional Education, Research and Practice has been a major driver for interprofessional activities. The Center goals are: 1) to promote curriculum and clinical innovations in interprofessional education across the health sciences and information schools, 2) to provide the infrastructure for catalyzing interprofessional health professions training initiatives and faculty development, and 3) to conduct evaluative research regarding the impact of health professions interprofessional innovations on students, faculty, providers and the health of the public. The collaboration fostered by the Center has resulted in many successful initiatives that positively impact students, faculty, and the community. Diverse interprofessional courses, practice experiences, certificate programs, seminars, and involvement in health advocacy initiatives are examples of learning opportunities available to University of Washington students. These experiences are threaded throughout our students’ educational experiences, from freshman seminars where students are considering various career options, to various points in the curriculum as health sciences students, and finally through continuing professional development opportunities after graduation. Active learning strategies are emphasized within the context of addressing current challenges in our health care system. Methods used to develop institutional and community partnerships and to build capacity for future initiatives are described in this poster.

Interprofessional Education: An Experience of Students’ Learning the Value of Teamwork in Patient Care. Paula Thompson, Samford University, Amy E. Broeseker, Samford University, Michael G. Kendrach, Samford University, Angela G. Rothrock, Patricia L. Sawyer, Channing R. Ford, Christine S. Ritchie. Objective: To describe an interprofessional education (IPE) exercise and evaluate pharmacy students’ attitudes towards participation in this activity. Introduction: The ability of healthcare professionals to work in interprofessional teams is increasingly important. The University of Alabama at Birmingham (UAB) Interdisciplinary Team (IDT) activity was developed to provide interdisciplinary experience for healthcare students.
Interprofessional Experiences at Regis University School of Pharmacy. Miki Goldwire, Regis University, Rebecca D. Moore, Regis University, Allana J. Sucher, Regis University, Marianne McCollum, Regis University. At Regis University School of Pharmacy, interprofessional education is incorporated across didactic, experiential, and community service experiences. The Interprofessional Education Committee at our college for health professions recognizes interprofessional courses as those taught jointly by pharmacy, nursing, and physical therapy faculty. Students from these disciplines learn with, from, and about each other as part of their experience. Currently, interprofessional didactic courses include Global Health Outreach and Interprofessional Spiritual Care. We are collaborating with our Service Learning Department to create an Interprofessional Disaster Response course, which will also include undergraduate students. Our ethics courses, currently taught individually in each school (pharmacy, nursing, and physical therapy), are being modified to be interprofessional offerings. This spring we are piloting an Introductory Pharmacy Practice Experience that expands interprofessional education to include simulation activities. Modules include patient counseling, Medication Therapy Management, and a medical surgery simulation with high fidelity mannequins. Service learning is integrated throughout the curriculum, with students held accountable each year for participation. Service learning experiences are interprofessional during the first professional year, spring semester, when students participate in a citywide health fair. Throughout the rest of the program, students can participate in various interprofessional service immersion opportunities, e.g., to Ethiopia, Appalachia, Wind River Indian Reservation, Costa Rica, and Nicaragua. Student opportunities for interprofessional education are augmented by interprofessional service immersion opportunities, e.g., to Ethiopia, and non-English speaking geriatric diabetic emergency; heparin overdose; steroid overdose that results in a malpractice trial; and post-surgical drug interactions. Future work is needed to assess the impact of interprofessional electives on learning and relationships amongst professions.

Interprofessional Faculty Development Program Targeted at Early Career Faculty. Melissa S. Medina, The University of Oklahoma, Valerie N. Williams, University of Oklahoma Health Sciences Center, Laura Fentem, University of Oklahoma Health Sciences Center, Mark L. Britton, The University of Oklahoma, Michael E. Burton, The University of Oklahoma, Kelly M. Standifer, The University of Oklahoma, JoLaine R. Draugalis, The University of Oklahoma.

The University of Oklahoma Health Sciences Center (OUHSC) is an Academic Health Center (AHC) with 6 professional colleges and a graduate college (allied health, dentistry, medicine, nursing, pharmacy, and public health). These colleges are co-located on a main campus in Oklahoma City; five programs also have faculty at a distant campus in Tulsa. The scope and complexity of faculty roles at an AHC are demanding. Helping early career faculty (ECF) develop the skills needed to balance their faculty roles is vital to their careers, allowing them to engage as strong intra/interprofessional team members and take on leadership roles that advance their disciplines and the AHC. The OUHSC Faculty Leadership Program (FLP) founded in 1990 is one structured and systematic strategy for providing this development. It is an 11-month interdisciplinary faculty development program consisting of a series of workshops (124 professional development hours) focused on teaching, research/scholarship, and service skills and roles needed within the AHC environment. All ECF (tenure/non-tenure track and clinical/basic science) may apply to the program after their first year with support from their department chair and College Dean. Approximately 2-3 faculty from each college are accepted annually resulting in an interdisciplinary class of ~15 fellows. Fellows are mentored and peer-reviewed by interdisciplinary faculty on a research project and a scientific presentation. FLP has successfully promoted sustained interprofessional collaboration among the fellows on research, service, and teaching initiatives. To date, over 300 ECF have graduated, representing all six professional programs at the AHC.

Interprofessional Learning through Elective Coursework. Kelly Sclaro, University of North Carolina at Chapel Hill, Jena Ivey Burkhart, University of North Carolina at Chapel Hill, Amanda H. Corbett, University of North Carolina at Chapel Hill. The UNC Eshelman School of Pharmacy promotes interprofessional education throughout the curriculum on several fronts including experiential training, extra-curricular activities, and through didactic electives. This abstract focuses on several interprofessional elective courses: Geriatric Pharmacy Practice; HIV/AIDS; and Interprofessional Teamwork and Communication. Each course utilizes unique teaching methods to promote interprofessional education. The Geriatric Pharmacy Practice course involves pharmacy, nutrition, occupational therapy, and physical therapy students. Students are divided into small groups focused around a geriatric patient case. The groups work on their case plan inside and outside of class, and during a follow-up session reconvene to present plans to their peer groups. Students reflect on what they learned from and about other professions and what they learned about the teamwork process in caring for older adults. The HIV/AIDS course is open to health affairs students and undergraduates including students from public health, pharmacy, medicine and nursing. Students explore the relationship between HIV/AIDS, society, and public policy through the use of film, patient panels, and writing assignments. Interprofessional Teamwork and Communication is offered to medical, nursing, and pharmacy students. The course helps students understand how teamwork and communication affect patient safety. High fidelity simulators and simulated patients are used for the cases. Examples of cases the student teams are asked to work on include: non-English speaking geriatric diabetic emergency; heparin overdose; steroid overdose that results in a malpractice trial; and post-surgical drug interactions. Future work is needed to assess the impact of interprofessional electives on learning and relationships amongst professions.

Interprofessional Research, Teaching and Service at the University of Georgia College of Pharmacy. Bradley G. Phillips, The University of Georgia, Trina J. von Waldner, The University of Georgia, Deanna W. McEwen, The University of Georgia, George E. Francisco Jr., The University of Georgia, Paul J. Brooks, The University of Georgia.
Interprofessional Education: Integrating Teamwork and Collaboration within a New Pharmacy Curriculum. Mary E. Kiersma, Manchester College, Ahmed Abdelmageed, Manchester College, Tracy L. Brooks, Manchester College, Dawn LaBarbera, University of Saint Francis, Suzanne Chubinski, University of Saint Francis, JeriSue Petrie, Fort Wayne Medical Education. The goal of interprofessional education (IPE) is to develop knowledge, skills and attitudes that result in interprofessional team behaviors and competence. Health care organizations such as the Institute of Healthcare Improvement and the Institute of Medicine have published recommendations for the provision of IPE in academia. Research has associated IPE with a reduction in patient deaths, sentinel events and health care costs. Currently, IPE is recommended or mandated by accrediting organizations in nursing, pharmacy, physician assistant and medical education. The Accreditation Council for Pharmacy Education encourages colleges and schools to develop interprofessional simulations to meet program goals and objectives. Our objective is to describe the development and integration of interprofessional education into the curriculum of a new School of Pharmacy. A framework for interdisciplinary learning activities has been developed to incorporate interprofessional education focused on patient-centered care and teamwork into the pharmacy curriculum. The first opportunity is comprised of a sequence of events designed to engage students from four different Indiana-based universities enrolled in medicine, nursing, pharmacy, and physician assistant programs. This sequence includes three events per semester to foster a collaborative learning environment in which participants practice effective communication skills with other health professionals. The second student opportunity is a joint effort with one university’s nursing and physician assistant programs to develop multiple laboratories throughout the curricula of each program that simulate authentic healthcare scenarios. A minimum of two laboratories per semester will emphasize effective communication, cultural competency, critical thinking and problem solving.

Introduction, Practice and Evaluation of Interprofessional Communication Skills. Kassandra M. Bartelme, Concordia University Wisconsin, Sean D. Stewart, Concordia University Wisconsin, Michael C. Brown, Concordia University Wisconsin, Andrew P. Traynor, Concordia University Wisconsin, Laurie L. Schenkelberg, Concordia University Wisconsin. Objective: Facilitate students’ development of interprofessional communication skills and strategies via lecture, simulation and evaluation in preparation for Advanced Pharmacy Practice Experiences (APPEs). Methods: Students at Concordia University Wisconsin School of Pharmacy are introduced to, practice and are evaluated on interprofessional communication skills in the spring semester of the second professional year. Students receive a lecture on interprofessional communication techniques, including the I-SBAR pneumonic (Introduction, Situation, Background, Assessment, Recommendation). Instructors model and students practice these techniques in one lab session and are evaluated in another. Both activities use case scenarios in which the providers are simulated by faculty or pharmacy residents. Instructors use a rubric to evaluate the five components of I-SBAR, General Communication and Closing. Results: Seventy-one students were given one of three ratings for each component: acceptable, needs improvement (NI) or needs significant improvement (NSI). At least 64 (90%) students received an acceptable rating for Introduction, Situation,
Background, General Communication and Closing with 63 (89%) receiving this rating for Assessment and 58 (82%) for Recommendation. The number of students receiving an NI rating ranged from one (1%) for Introduction to 12 (17%) for Recommendation. Three (4%) students received an NSI rating for Introduction and Closing, whereas one (1%) received this rating for Recommendation. Implications: The opportunity for students to practice and be evaluated on their interprofessional skills will help prepare them for APPEs. Students’ skills will continue to be developed and evaluated using different scenarios culminating with interprofessional communication activities during their APPEs.

Leadership Legacy – Enhancing Interprofessional Training Through Service Learning. Kelley L. Ratermann, University of Kentucky, Jeff J. Cain, University of Kentucky. Objective: To develop interprofessional leadership skills, professionalism, and healthcare experiences through team-building, self-awareness, presentation development, and service learning. Methods: The University of Kentucky (UK) Leadership Legacy (LL) program is a student-run, cohort-based, extracurricular enrichment opportunity designed to complement formal curricula. Originating in the UK College of Medicine, LL now enrolls select students from the UK Colleges of Medicine, Dentistry, Nursing, Pharmacy, Health Sciences, and Public Health. The program consists of a series of activities including retreats, student-developed workshops, and coaching relationships with health professions faculty members. A novel service-learning component, the HIV-ABC (Adherence, Buddies, and Counselors) service project, proposed by pharmacy students was incorporated into the 2011-2012 program. Results: Thirty-six interprofessional students were enrolled in the 2011-2012 LL program. In addition to the structured retreats, workshops, and mentoring activities, interprofessional teams were assigned to a specified route and delivered food and medication to HIV patients. Each team maximized patient experiences by choosing an aspect of care to discuss with the patient during delivery visits. The additional service learning aspect of LL augmented the knowledge-building exercises by exposing participants to actual HIV patients and providing an avenue for real-time, collaborative care. Implications: Real life patient encounters embody the philosophical learning aspects of interprofessional education. Implementation of the service-learning component into LL enhanced the program and will be expanded next year. LL will collaborate with a community-based organization to reach a more comprehensive HIV/AIDS population, thereby providing students with the opportunity to participate in additional interprofessional healthcare experiences.

Mapping the Future of IPE in Schools Located on Non-medical Campuses. R. Lee Evans, Auburn University, Kristi W. Kelley, Auburn University, Sharon McDonough, Auburn University. Objective: Auburn University Harrison School of Pharmacy (AUHOSP) is located on a non-medical campus as one of 13 other schools and colleges for a total university enrollment of 25,000. Although there are other schools/colleges on campus that would be a part of providing healthcare to patients, there is not a health science focus. AUHOSP has undertaken efforts for an IPE pilot program through a campus-wide task force. Methods: The task force has been at work for 18 months and has progressed through initial planning with current leaders in IPE to small pilots. To date, participants have included representatives from 12 of the 13 schools/colleges on campus. Many participants are motivated by the desire to improve working relationships among professionals in the real world, believing that exposing students to other professions should facilitate this goal. Results: The group has developed and approved core interprofessional competencies drawn from the 2011 Core Competencies for Interprofessional Collaborative Practice. The first case of the pilot program has been tested with a group of students – undergraduate and professional - representing 7 of the colleges/schools on campus. Given the volunteer nature of the pilot program, participation from a variety of programs was strong, and the pilot case was well-received. Implications: Current plans include development of a curricular proposal for IPE which would provide schools/colleges the flexibility to decide which parts would be required for certain degrees as well as provide opportunities for students to receive additional credit that would distinguish them from their colleagues.

Midwestern University Chicago College of Pharmacy’s Multifaceted Approach to Interprofessional Learning. Jacob P. Gettig, Midwestern University’s Chicago College of Pharmacy, Sally Arif, Midwestern University’s Chicago College of Pharmacy, Kelly Lempicki, Midwestern University’s Chicago College of Pharmacy, Avery L. Spunt, Midwestern University’s Chicago College of Pharmacy. Midwestern University (MWU) spans two campuses and nine colleges and offers graduate degrees in a variety of healthcare disciplines, including but not limited to, osteopathic medicine, dental medicine, optometry, podiatry, physician assistant studies, physical therapy and occupational therapy. As part of the Illinois campus, Chicago College of Pharmacy (CCP) is well positioned to provide interprofessional learning opportunities both inside and outside of the classroom. In the first professional year, CCP students and first year students in all of MWU’s other colleges, complete Healthcare Issues, a course in which each profession demonstrates its distinct contribution to patient care. Pharmacy and medical students learn together in required didactic courses including biochemistry, pharmacology and healthcare communications. CCP students also interact with students in other MWU colleges in many of their elective courses. IPPE and APPE rotations offer excellent interprofessional learning opportunities for CCP students in Chicagoland’s diverse clinics and hospitals. MWU Student Senate provides CCP students opportunities to participate in student governance with students from the other MWU colleges. Interprofessional service learning opportunities include the Collaborative Health Advocate Team (CHAT), which provides diabetes education and care in local underserved clinics, and the MWU/DoCare Guatemala Medical Mission, which offers students from all MWU colleges a unique opportunity to travel abroad to provide much needed care for impoverished Guatemalan citizens. Looking ahead, in 2013 MWU will open a fully functional multidisciplinary healthcare clinic where CCP students will work with medical, dental and other healthcare professional students to provide patient care services to the community.

Non-sequential Roll-out of Interprofessional Education at the University of Colorado. Kari L. Franson, University of Colorado, Wesley A. Nuffer, University of Colorado, Catherine Jarvis, University of Colorado. Interprofessional education (IPE) has been offered to over 600 students on the University of Colorado Health Science campus for thirteen years. Early IPE success even led to the construction of IPE environments when building our new campus. Although this fostered several activities for IPE, it wasn’t until the appointment of a Director of IPE in 2009 that a sequential program “Realizing Educational Advancement for Collaborative Health (REACH)” for student development was created. Current REACH sequence and years the IPE activity has been in existence: Interprofessional orientation (12 years): 6 hours in small IP groups focusing on professional qualities and collaboration Student academic communities (4 years): Theme-based student-run organizations which enrich students’ campus life Interprofessional fundamentals (1 year): Student teams work with a Health mentor = member of community with chronic illness or disability and explore: Health life history (role clarification), Wellness plan.
Outcomes of an Interdisciplinary Education Case Experience for Students of Three Professional Health Programs. Melissa M. Chesson, Mercer University, Jeannette R. Anderson, Mercer University, Jill Mattingly, Mercer University. Objectives: To develop an interdisciplinary education case experience for students of three professional health programs and to describe student perceptions of the experience.

Methods: One-hundred-thirty-four pharmacy (PharmD), 42 physician assistant (PA), and 35 physical therapy (DPT) students were divided into eighteen teams comprised of students representing each discipline to complete a patient case. A 15-item modified Readiness for Interprofessional Learning Survey (RIPLS) was administered to students before and after the activity. Students were also requested to comment on the benefits and drawbacks of the experience and provide suggestions for improvement. Descriptive statistics and the Wilcoxon signed-rank test were used to analyze survey results. Qualitative analysis of student comments was performed using grounded theory. Results: A total of 123 PharmD, 39 PA, and 33 DPT students completed the surveys. Statistically significant improvements in the RIPLS subscale of teamwork and collaboration were found post-activity for PharmD and PA students (p = 0.00, respectively) but not for DPT students (p = 0.71). Overall, 70% of students commented on the benefits of the experience with the most common themes identified as learning the roles and scope of practice of each discipline (22%) and learning each disciplines’ perspectives related to patient care (27%). Sixty percent of students did not identify any drawbacks to the experience. Implications: The majority of students reported positive perceptions of the interdisciplinary education case experience. An interdisciplinary education case experience can be used to promote teamwork and aid students in learning about the roles and perspectives of other health disciplines.

Passport to Interprofessional Education: Steps in the Journey to Collaborative Practice. Marion L. Pearson, Pacific University of British Columbia Faculty of Pharmaceutical Sciences, Lynda M. Eccott, The University of British Columbia Faculty of Pharmaceutical Sciences. We highlight recent efforts to develop an interprofessional education “passport” and two new learning opportunities. Passport: Students have access to approximately 60 interprofessional learning opportunities, from drop-in discussions to academic coursework. In 2011/12, an online “passport” was developed to facilitate registration in and documentation of participation in such activities. Each activity is assigned a point value, based on degree of collaboration, complexity, duration and other criteria. Students are encouraged to complete a set number of points before graduation. The “Big Event”: This event introduced concepts of interprofessional collaboration to 698 students from audiology, dietetics, kinesiology, medicine, midwifery, nursing, occupational therapy, pharmacy, physical therapy, social work, and speech and language pathology. It included inspirational presentations and facilitated team discussions, with a team challenge issued at the conclusion. Evaluation data suggest students appreciated the opportunity to come together but that modifications are needed to better achieve the intended learning outcomes. Health Mentors Program: This 18-month elective, still ongoing, involves 92 students from 6 programs (dentistry, medicine, nursing, occupational therapy, pharmacy, and physical therapy) working in teams to learn from and with a person with a chronic condition. The program includes an orientation and six visits with the health mentor to discuss topics such as management of chronic conditions, impact of illness on daily life, managing information, and experiences in the health care system. Mid-point evaluation suggests that student learning has been rich and complex. Key findings will be presented.

Pharmacy College Development of Multidisciplinary Employee Health and Wellness Clinic Involving IPPE and APPE Students. Karen L. Kier, Ohio Northern University, Michael J. Rush, Ohio Northern University. Ohio Northern University has developed a multidisciplinary health and wellness clinic for employees and dependents.

Objective/Methods: A disease state management pilot program was designed to evaluate a campus need and involved pharmacists, a nurse practitioner, a nutrition coach, and two exercise physiologists. The program was IRB approved to collect research data. All patients signed informed consent.

Results: With success of the pilot, ONU HealthWise was established and a director was hired. 54 patients were enrolled in the first year of the program which added a wellness component. All patients met with a pharmacist and, upon referral, could meet with a nurse, exercise physiologist, or nutrition coach to improve fitness parameters and clinical outcomes related to diabetes, hypertension, and hyperlipidemia. Students within these disciplines including APPE and IPPE students participated if permitted by the patient. Clinical values as well as patient satisfaction were assessed at baseline and at appropriate intervals thereafter. ONU HealthWise sponsored free fitness classes as well as educational seminars/newsletters written by APPE students. The program currently has 303 employees enrolled. A successful osteoporosis screening program was developed by IPPE students and the program has screened 133 employees. ONU HealthWise works in conjunction with Human Resources to offer Healthy Points to employees to provide insurance incentives if they meet healthy goals.

Implications: This multidisciplinary clinic offers pharmacist and student pharmacists an opportunity to interact with other health care providers, other health care students, patients and be a part of an innovative health care team.

Promoting Vision Driven Interprofessional Activities. Reza Karimi, Pacific University Oregon, Brad S. Fujisaki, Pacific University Oregon, Doug A. Meyer, Pacific University Oregon, Susan M. Stein, Pacific University Oregon. Pacific University College of Health Professions (CHP) comprises eight health professions located in two adjacent buildings. The School of Pharmacy (SOP) is one of the CHP’s health professions. The proximity of the SOP to seven other health-related programs has facilitated interaction among students, faculty and staff to participate in multiple interprofessional activities. There is a positive correlation between interprofessional education and effective interprofessional collaboration in healthcare settings. It is imperative to train students to work in interprofessional teams in order to recognize the strengths and limitations of their own professions and to appreciate the knowledge, contributions, and responsibilities of other health professions. Utilizing a vision driven and multidisciplinary approach, the SOP has built a learner-centered paradigm that promotes and supports interprofessional activities. The interprofessional activities have assisted students, from different health professions, in developing essential interprofessional knowledge, skills, attitudes, and values. The SOP faculty have been leaders in the establishment and implementation
Seedling Strong Roots for Bountiful Fruits: Interprofessionalism at the University of California, San Francisco. Tina Brock, University of California, San Francisco, Jennifer Cai, University of California, San Francisco, Peter D. Colley, University of California, San Francisco, Renee Coury, University of California, San Francisco, School of Medicine, Thomas E. Kearney, University of California, San Francisco, Lisa A. Kroon, University of California at San Francisco, Conan MacDougall, University of California at San Francisco, Asya Olsheny, University of California, San Francisco, Maura Purell, University of California, San Francisco, Scott Reeves, University of California, San Francisco, Craig Smolin, University of California, San Francisco, School of Medicine, Kevin H. Souza, University of California, San Francisco, School of Medicine, Sandijn M. Van Schaik, University of California, San Francisco, School of Medicine, Sharon L. Youmans, University of California at San Francisco. Objective: To summarize example UCSF activities related to each of the factors that research has associated with successful interprofessional IPE programs. Projects described foster knowledge about the potential contributions of other professions, positive attitudes toward working in interprofessional teams, skill in working with others and behavior that is supportive of others. Methods: UCSF has seeded the key factors in interprofessional education with the following projects - (1) Learner-focused: High-fidelity simulation cases in toxicology during interprofessional clinical rotations (2) Faculty-focused: A university-wide curricular management system that provides a robust and transparent mechanism for sharing information about the didactic instruction within and across programs (3) Organizational-focused: A series of two sequential interprofessional days for first year students instruction within and across programs (4) Culture change-focused: Preferential access to the best teaching rooms on campus for interprofessional standardized patient exercise (5) Culture change-focused: Preferential access to the best teaching rooms on campus for interprofessional standardized patient exercise (6) Culture change-focused: Preferential access to the best teaching rooms on campus for interprofessional standardized patient exercise (7) Culture change-focused: Preferential access to the best teaching rooms on campus for interprofessional standardized patient exercise (8) Culture change-focused: Preferential access to the best teaching rooms on campus for interprofessional standardized patient exercise.

Results: Early budding in attitudes, skills and experiential curricula for CHP’s first year students. In addition, the establishment and assessment of those activities. In addition, a series of assessment data will be presented to emphasize the strengths and significance of the implemented interprofessional activities.

Strategic Leadership from Pharmacy for Interprofessional Education (IPE) on a Health Sciences Campus. Susan M. Meyer, University of Pittsburgh. Objectives: Lead a coordinating body for IPE; implement IPE opportunities and events; and promote networking among those with educational leadership responsibilities. Methods: The Working Group on Interprofessional Education (WGOPE) at the University of Pittsburgh provides the leadership to advance IPE across the six health sciences schools and functions as the coordinating body across the University for development of IPE opportunities. It facilitates networking among those with educational leadership responsibilities and the Senior Vice Chancellor’s Office. The WGOPE advances the beliefs that 1) interprofessionalism is fundamental to providing care to individuals and populations that is effective, safe, of high quality, and efficient; and 2) respect among individuals for the unique contributions each profession makes is essential for enhancing the teamwork, effective communication, and efficiency that lead to high quality care. The School of Pharmacy exerts leadership by convening the WGOPE, managing the budget allocated for interprofessional activities, and securing external funding to facilitate student achievement of interprofessional core competencies. Results: The University of Pittsburgh has been successful in advancing IPE as evidenced by 1) implementing an Interprofessional Forum for first-year students for four consecutive years; 2) obtaining external funding to support interprofessional curriculum development in geriatrics; 3) engaging curriculum leaders from across the health sciences in strategic discussion around the “Core Competencies;” and 4) connecting faculty across the health sciences for specific IPE initiatives and research projects. Implications: A broad-based coordinating body can engage in strategic development of IPE on campus and foster development of a wide array of learning opportunities.

Student Attitudes and Reflections on Interprofessional Learning. Colleen Massey, Massachusetts College of Pharmacy and Health Sciences-Worcester/Manchester, Donna L. Bartlett, Massachusetts College of Pharmacy and Health Sciences-Worcester/Manchester, Jeffrey Fong, Massachusetts College of Pharmacy and Health Sciences-Worcester/Manchester, Ann Charrette, Massachusetts College of Pharmacy and Health Sciences, School of Physical Therapy, Irena Bond, Massachusetts College of Pharmacy and Health Sciences, Library and Learning Resources, Paula Bylaska-Davies, Massachusetts College of Pharmacy and Health Sciences, School of Nursing, Natalie Scheidt, Massachusetts College of Pharmacy and Health Sciences, School of Physician Assistant Studies-Worcester/Manchester, Carrie Walker, Massachusetts College of Pharmacy and Health Sciences, School of Physician Assistant Studies-Worcester/Manchester, Karyn M. Sullivan, Massachusetts College of Pharmacy and Health Sciences, School of Pharmacy-Worcester/Manchester. Intent: Students from the Schools of Pharmacy, Nursing, Physical Therapy, and Physician Assistant Studies prepared and participated in a community-based fall prevention program for older adults. Students were assessed for changes in attitude regarding interprofessional learning and reflected on their experience. Process: Students from the four professions taught each other about their respective profession and its relation to fall prevention during a pre-event training session. Students completed a modified Readiness for Interprofessional Learning Scale (RIPLS) at pre- and post-event sessions. During the fall prevention program, students spent a portion of time with the other professions while providing health screenings for participants. Students completed a reflective activity during the post-event session. Outcomes: Forty-six students completed the RIPLS. An increase in agreeability was seen from the pre- to post-scale when students were asked if team-working skills are essential to learn (4.57 vs. 4.77, p = 0.046), shared learning helps to think positively about other professions (4.24 vs. 4.60, p = 0.007), and they would welcome opportunity to work on projects with other professionals (4.24 vs. 4.65, p = 0.003). A decrease in agreeability from pre-and post was seen when asked if there is little overlap between health care professional roles (2.20 vs. 1.73, p = 0.021) and among pharmacy students’ responses when asked if they would feel uncomfortable if another health care professional knew more about a topic than they did (2.55 vs. 1.82, p = 0.038). Implications: Students’ attitudes about interprofessional learning changed while participating in an interprofessional fall prevention program.

Student Perceptions after an Interprofessional Education (IPE)
Experience: A Pilot Study. Catherine L. Hatfield, University of Houston, Kelly Vandenbarg. Objectives: The objective of this study was to determine if communication to and perceptions of students in other health care professions changes with the IPE experience. Methods: In the spring of 2011, The University of Houston College of Pharmacy worked collaboratively with Texas Women’s University College of Nursing to administer this IPE pilot study. The study occurred on three afternoons when the pharmacy students, nursing students, and high fidelity simulation lab were available. It included 6 pharmacy students and 5 nursing students who worked in interprofessional teams during a high fidelity simulated patient exercise. Surveys were given before and after the simulated case scenario to measure perceptions of other health care professionals and potential communication barriers. A post-case reflection survey was also documented. Results: All pharmacy and nursing students agreed that this exercise should be used in the future and they all agreed that it was beneficial to them. The reflection survey also asked several questions concerning the ability of students to prioritize their duties while working with other team members and caring for the patient, what students learned about the other discipline, what students learned about themselves, and what the benefits/detriments of this exercise were. The specific answers to these additional survey questions will be reported. Implications: Removing communication barriers and negative perceptions of other health care professionals would be beneficial to the care of patients. Training interprofessional students to work together will likely improve communication and help them work collaboratively as a healthcare team upon graduation.

Student Organizational Impact on Minority Pharmacy Students and Diversity Awareness through Community Service. Edgar Díaz-Cruz, Belmont University, Angela Hagan, Belmont University, Philip E. Johnston, Belmont University. According to Census data from 2006-2010, Nashville is home to the most foreign born persons in the state of Tennessee. Minority populations are increasing in numbers as shown by the latest 2010 U.S. Census Bureau with increased percentages in Hispanics and Asians as compared to the 2000 census. Access to primary health care physicians is sometimes limited and pharmacists are often a consistent source to educate communities on better health practice while establishing trustworthy relationships with their local patients. In order to prepare future generations of pharmacists, representation of the diversity of the community, the Student National Pharmaceutical Association (SNPhA) is a way to reach out to minority students. This outreach directly impacts current Belmont University College of Pharmacy students as it develops their awareness of the various needs in minority communities. Interprofessional faculty advisors in the areas of pharmaceutical, social and administrative sciences are strategically developing the organization to meet these diverse needs. The foundation of this organization is centered on service projects consisting of cultural competency training sessions, high-school student advising sessions, and community-based service projects. These sessions are designed to encourage dialogue between students and patients on healthcare disparities and develop a positive image of pharmacists in the community. Our results suggest that by engaging students and interprofessional faculty advisors in community-based service projects, minorities and foreign-born persons are receiving access to education to promote healthy living in middle Tennessee. Additionally, our students gain a respect for serving minority communities and learn professionalism beyond course learning.

The Appalachian College of Pharmacy’s Mountain Care Center: An Interprofessional Team Approach to Rural Health. Joseph A. Farmer, Appalachian College of Pharmacy, Susan L. Mayhew, Appalachian College of Pharmacy, Brenda T. Smith, Appalachian College of Pharmacy, Sharon Deel, Appalachian College of Pharmacy, Leah K. Hollon, Appalachian College of Pharmacy. Consistent with the mission of the Appalachian College of Pharmacy (ACP), the college expanded its role within the community by opening the Mountain Care Center (MCC) in July of 2011. Located in rural Southwest Virginia (SWVA) just a few miles from the ACP campus, the MCC provides a mission-focused interprofessional approach to health care and community service. SWVA has the lowest physician to population ratio in the state—which renders much of the region as medically underserved. SWVA residents suffer disparately from the effects of chronic diseases: cardiovascular disease, diabetes, cancer, chronic lung disease, and mental illness with prevalence rates that far exceed the national average. The MCC team consists of pharmacists, student-pharmacists, nurses, and a naturopathic physician who work collaboratively with health care professionals within the community to provide medication therapy management, patient education, smoking cessation, nutrition counseling, preventative health and wellness services, and health screenings targeting at-risk populations. A prescription assistance program is also available for patients who are uninsured and unable to afford their medications. All health-related, educational, and prescription assistance services are provided free of charge. The MCC serves as a teaching site for pharmacy students. This experience fosters student understanding of the unique health challenges facing rural and underserved areas and exemplifies a novel pharmacological and non-pharmacological interprofessional approach to rural health. The MCC promotes health improvement, wellness, and disease prevention in cooperation with patients, communities, and at-risk populations, within a framework of an interprofessional team of health providers to optimize patient health.

The Crossroads of Interprofessionalism: Four Avenues of Collaboration at the Wegmans School of Pharmacy. David J. Hutchinson, St. John Fisher College, Jennifer L. Mathews, St. John Fisher College, Jane M. Souza, St. John Fisher College, Anthony Corigliano, St. John Fisher College, Andrea Traina, St. John Fisher College, Katherine Juba, St. John Fisher College, Jill E. Lavigne, St. John Fisher College. Objective: The utilization of interprofessional education and collaborative practice delivers optimal health services and improves patient outcomes. Training future healthcare providers in an integrated environment promotes a “collaborative practice-ready” workforce. The aim of this study was to identify ongoing specific interprofessional collaborative projects and promote their awareness among faculty at the St. John Fisher College Wegmans School of Pharmacy. Methods: Faculty members were surveyed to identify the ongoing interprofessional collaborative initiatives among pharmacy faculty. Results: A total of four collaborative practices were identified among faculty: ambulatory care, assisted-living, didactic, and assessment. The ambulatory care setting at an osteoporosis clinic provides patient-centered care with a clinical component. Each patient with a new diagnosis or change in medication therapy receives education/counseling from a pharmacist, a registered nurse for medication administration and a physician for a physical exam. In the assisted-living setting, pharmacy and nursing students are paired to conduct a high-level health assessment in their respective disciplines. Didactic interprofessional efforts are being conducted to create a flexible and comprehensive pain education curriculum. Physicians, dentists, nurses, pharmacists, psychologists, chiropractors, and oriental medicine practitioners will develop the curriculum. The pain module will be adaptable for interprofessional education activities. Finally, recognizing the similarities in accreditation standards for communication and professionalism, the School of Pharmacy and the NY Chiropractic School are
sharing strategies and rubrics for assessing these outcomes. Implications: The survey revealed a broader range of interprofessional collaborations than was originally suspected. The school will continue to foster and support interprofessional education and collaborative practice.

UMKC School of Pharmacy: Advancing Interprofessionalism through the Curriculum, Experiential Sites and Community Service. Mark T. Sawkin, University of Missouri-Kansas City, Frank Caligiuri, University of Missouri-Kansas City, Sara J. Deppe, University of Missouri-Kansas City, Crystal D. Obering, University of Missouri-Kansas City, David C. Phillips, University of Missouri-Kansas City. The University of Missouri – Kansas City School of Pharmacy (UMKC-SOP) offers students many opportunities to learn and collaborate interprofessionally throughout the curriculum, on experiential rotations and within the community. Curricular opportunities at the UMKC-SOP at MU include an interprofessional curriculum involving pharmacy, medicine, nursing, respiratory therapy and health administration, focusing on patient safety and quality care. Students attend an introductory lecture and small interprofessional group discussions centering on an adverse event case study, concluding with a high-fidelity and standardized patient simulation requiring interprofessional teams to review and identify safety concerns in a busy emergency room type setting. Clinical practice sites in Kansas City and Columbia also afford IPPE and APPE rotation students the opportunity to engage in multidisciplinary healthcare, working side-by-side with physicians, nurses, behavioral health therapists, social workers, case managers, chiropractors and peer counselors. Since 2008, the UMKC-SOP has been extensively involved in interprofessional community service including the development and execution of the annual UMKC Health Sciences Wellness Fair in which the schools of pharmacy, nursing, medicine and dentistry collaborate to offer students the opportunity to work on an interprofessional team, providing free screening exams and health education to an underserved community in the greater Kansas City area. Student-operated community health clinics, including the MedZou clinic (Kansas City) and the Sojourner Clinic (Kansas City), provide free quality primary healthcare to underserved patient populations, incorporating nursing, medical, social work, public health, health management and informatics (HMI) and undergraduate pre-medical students, as well as students and faculty from the UMKC-SOP.

UnBULLievable Interprofessional Opportunities at the University of South Florida College of Pharmacy. Marianne E. Koenig, University of South Florida, Erini S. Serag, University of South Florida, Amy H. Schwartz, University of South Florida, Kamila Deli, University of South Florida, Diane S. Allen-Gipson, University of South Florida, Jose L. Barboza, University of South Florida, Amanda DeBruin, University of South Florida, Sheetal P. Dharia, University of South Florida, Angela M. Hill, University of South Florida, Yashwant V. Pathak, University of South Florida, Heather M.W. Petrelli, University of South Florida, Sheeba Varghese Gupta, University of South Florida, Glenn J. Whelan, University of South Florida, Kevin B. Sneed, University of South Florida. Interprofessional engagement is a strategic initiative of the University of South Florida (USF). The College of Pharmacy (COP) has identified areas within its didactic curriculum, simulation activities, community service and research for deliberate, meaningful interaction between the students and faculty of USF Health. An Interprofessional Education (IPE) Workgroup, including faculty from medicine, physical therapy, athletic training, nursing, and public health, developed and implemented four IPE learning modules that introduce basic IPE concepts, case discussions, and simulation activities. Content within the Pharmacotherapeutics sequence aligns with the College of Medicine (COM) curriculum. Within the Pharmaceutical Skills sequence, COP and COM students will participate in case discussions and simulation activities within the Virtual Patient Care Center (VPCC). The VPCC, located at the Center for Advanced Medical Learning and Simulation (CAMLS), contains a virtual clinic, hospital ward, and ambulatory and inpatient pharmacies. Plans regarding development of APPE utilizing previous student teams are ongoing. Additional IPE initiatives within USF Health include the BRIDGE Healthcare Clinic, a student-driven, indigent clinic on the USF campus; the Health Service Corps that supports community service events; and Project World Health that sponsors medical mission trips. The COP is developing a PGY1 residency and pharmacogenomics fellowship that will capitalize on collaborations within USF and affiliate institutions. The COP enables intra- and inter-department faculty interfaces along with peers from across USF in order to cultivate research collaborations. All COP faculty will have joint appointments with other USF programs or an affiliate institution; similarly, the COP has extended courtesy appointments to collaborators.

University of Cincinnati and IHI Open School: Creating Opportunities for Extracurricular Interprofessional Student Experiences. Bethanne Brown, University of Cincinnati College of Pharmacy, Marianne F. Ivey, University of Cincinnati College of Pharmacy, Jill M. Boone, University of Cincinnati College of Pharmacy. Objectives: In spring 2010, the University of Cincinnati launched an Institute for HealthCare Improvement (IHI) Open School Chapter. Methods: This student-run, faculty-mentored organization provides extracurricular educational opportunities for students to learn and work on interprofessional teams in the context of increasing awareness and focus on patient safety (PS) and the quality improvement (QI) process. Our chapter consists of students from the Colleges of Allied Health Science, Medicine, Nursing and Pharmacy. Results: This student chapter allows our program to begin to meet the increasing demands for students across the health professions to learn from, with, and about each other. Our chapter meets monthly to review on-line learning modules and conduct chapter business. By focusing opportunities in the realm of PS and QI, students’ activities are anchored in substantive, real-world contexts. In March 2011, the chapter successfully launched a self-management clinic at St Vincent de Paul, a local community agency serving an underserved area of Cincinnati. Interprofessional student-faculty teams have direct patient contact with a focus on helping patients to self-manage their diets, activity levels, medication taking and overall care. Implications: This service-learning site provides students the opportunity to apply and improve their skills in key content areas such as quality improvement, patient safety, teamwork, leadership, and patient-centered care. Additionally, IHI Open School chapters provide an excellent networking forum for faculty and students within our own university and from other health-related local, national and international student chapters.

University of Wyoming School of Pharmacy Interprofessional Education: Taking Steps, Changing the Culture. Carol J. Kobulnicky, University of Wyoming, Suzanne Clark, University of Wyoming, Cara A. Harshberger, University of Wyoming, Janelle L. Krueger, University of Wyoming, Linda G. Martin, University of Wyoming, Mary Anne Purtzer, University of Wyoming, Linda E. Johnson, University of Wyoming School of Nursing, Jenny L. Garcia, University of Wyoming. The University of Wyoming School of Pharmacy is in the College of Health Sciences, which includes Nursing, Social Work, Kinesiology and Health, Communication Disorders, and WWAMI Medical Education (through affiliation with the University of Washington). Efforts to incorporate interprofessionality into the pharmacy curriculum extend throughout the PharmD program. Interprofessional education (IPE) opportunities are expanding as our School works with the recently formed
college-level Interprofessional Education Committee. P1 and P3 students participate in a threaded online discussion (one per year) with students in Nursing on topics of cultural competency and leadership/teambwork, respectively. These are embedded within existing courses, and overcome logistical barriers that limit face-to-face activities. In addition to courses that enroll both pharmacy and non-pharmacy students, Pathophysiology (P1) includes case-based presentations by interprofessional groups of pharmacy, pre-nursing, and other pre-professional students. Guided by our health sciences librarian, pathophysiology groups gain PubMed and CINAHL skills. P2 students participate in a pharmacist-physician communication unit. P4 students participate in a faculty-facilitated discussion about team-based care and interprofessional conflict. Last, in addition to numerous opportunities for team-based care experiences through IPPEs and APPEs, students have the opportunity to participate in an elective interdisciplinary APPE with a rural emphasis, working directly with physicians or as part of interdisciplinary teams in rural US or international locations. Student-led non-curricular interprofessional efforts include an annual college-wide health fair and a new interdisciplinary case-based activity. Future IPE in development includes greater collaboration with Nursing and the addition of Medical Social Work to create embedded technology-aided course activities.

Using Rural Hospital Staff Peer Review Teleconferences for Case-based Learning for Physicians and Pharmacy Students. Bree C. Watzak, Texas A&M Health Science Center, Robert H. Stanberry, Texas A&M Health Science Center, Lisa Killam-Worrall, Texas A&M Health Science Center. Texas A&M Health Science Center (TAMHSC) College of Pharmacy faculty members partnered with the TAMHSC Rural and Community Health Institute (RCHI) to offer a unique program to address a special need of rural hospitals – physician peer review. The Rural Physician Peer Review Program (RPFR®) is an “internal” program facilitated by RCHI which uses e-technology and teleconferencing to bring physicians together to discuss patient care. Information is provided through a HIPAA-compliant, secure web portal. The actual meeting is conducted via a secure conference call. Pharmacy faculty began by assisting physicians in evaluation of prescribed therapy and medication “systems” issues. RPFR® promotes shared learning which incorporated into the peer review process, removing bias and the traditional punitive focus. When “systems” issues are recognized, feedback is provided to the hospital as opportunities for improvement. This information can then be used to enhance the hospital’s quality and safety programs. RPFR® has grown from an initial two hospitals in 2003, to the current 57 participating hospitals. The College of Pharmacy has strengthened its position by offering student participation by making it a pharmacy elective as well as an APPE rotation experience. Pharmacy students gained a unique perspective as they were able to listen to the physicians analyze their thought processes. Additionally, the process of retrospectively reviewing a medical record is a different approach to patient care than typically being provided in the didactic portion of the curriculum. The availability of the entire patient story is new and yet necessary for future professional duties.

Utilization of Interprofessional Assessment Tools in the Resource-constrained Practice Setting of Eldoret, Kenya. Monica L. Miller, Purdue University, Ellen M. Schellhase, Purdue University. Objective: Medical and pharmacy students complete eight week international experiences in Eldoret, Kenya. As a part of the multidisciplinary team, students participate in daily ward rounds and present morning reports and patient case presentations at Moi Teaching and Referral Hospital. The objective of this project is to provide interprofessional feedback and identify common areas for student improvement. Methods: Using relevant literature on performance measurement in academic medicine settings, two assessment tools were developed. The assessments utilize Likert scale measurements and allow for free text comments. The interprofessional team tool (ITT) assess items including professionalism, application of knowledge, engagement, and communication skills. The performance assessment tool (PAT) measures preparedness, presentation style, ability to respond to questions, and appropriateness of patient management. The ITT is distributed to the entire patient care team twice during the rotation, at mid-point and end. The PAT is distributed to each student and preceptor in attendance during morning report and patient case presentations. Students complete a self-assessment, review the peer and preceptor comments, and return all assessments to their preceptor. Quantitative and qualitative data will be compiled and analyzed to identify the strengths and weaknesses of students. A Cronbach’s alpha will be performed to measure the internal reliability of the assessment tools. Results and Implications: The primary preceptor is able to provide constructive feedback by utilizing evaluations from peers and other preceptors. This information will also be utilized to direct curriculum development and identify opportunities for improving training prior to the rotation experience.