MEETING ABSTRACTS

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BIOLOGICAL SCIENCES

Completed Research

Admissions Criteria and Predictors of Success in an Accelerated Pharm.D. Program with a Block Curriculum. Rajan Radhakrishnan, University of Southern Nevada, Katherine Smith, University of Southern Nevada, Elizabeth J. Unni, University of Southern Nevada, Jin Zhang, University of Southern Nevada, Christine Bridgen, University of Southern Nevada, Thomas G. Metzger, University of Southern Nevada, Michael H. DeYoung, University of Southern Nevada. Objective: Several studies have found science GPA and PCAT scores to correlate with academic performance in a doctor of pharmacy program. It is unclear whether these factors still correlate when applied to a 3-year program or when students focus on one topic at a time. The purpose of this study was to determine whether admission criteria used at most colleges of pharmacy correlate with academic performance in an accelerated entry-level college of pharmacy that utilizes a block curricular design. Methods: A retrospective regression analysis was performed using admissions and demographic data (GPA, type of institution, student age, type of pre-pharmacy degrees obtained, and number of recent credit hours), and student assessment scores for students enrolled between Fall 2005 and June 2009. Results: Science prerequisite GPA had a positive significant correlation and age had a negative significant correlation with assessment scores for first- and second-year students. The type of pre-pharmacy degree obtained (basic science or medical vs. other types) correlated with academic performance in the first year only. Assessment scores for third-year students correlated only with second-year assessment scores. Implications: Neither type of institution (4-year college or university vs. community college) nor the number of credit hours earned in the preceding 4 years correlated with academic performance while age and pre-requisite science GPA did. With the exception of the negative correlation between age and academic performance in the first two years, the results were consistent with previous research on predictors of academic performance in non-accelerated programs with traditional curricular design.

Applied Biomedical Sciences Workshop (PHRD 307): Replacing Anatomy and Physiology in the Professional Curriculum. James M. Culhane, College of Notre Dame of Maryland, Marina Benova, College of Notre Dame of Maryland. Objectives: The purpose of this study was to determine the effectiveness of a newly designed, 3 credit hour; case based learning course (PHRD 307) to improve the overall knowledge of P-1 students who completed 8 credit hours of required pre-pharmacy work in anatomy and physiology. Method: The Applied Biomedical Sciences Workshop is designed to teach students to self-assess, remediate and ultimately apply their knowledge of anatomy and physiology in preparation for advanced pharmacotherapy course work. The course is subdivided into 8 organ system based blocks. In each block students are required to take an initial formative assessment, complete related out of class self-directed learning assignments based on their formative assessment performance, and eventually apply their knowledge in small group, workshop based clinical case scenarios. Pre- and post course anatomy and physiology knowledge was assessed using a nationally available, standardized, comprehensive anatomy and physiology exam developed by the Human Anatomy and Physiology Society (HAPS). Results: The pre-course class mean on this exam was 45.61 ± 9.08 %. The post course class mean was 61.54 ± 8.92%. Comparison of pre- and post-test scores show a statistically significant increase in performance after completion of PHRD 307 (p<0.0001). Post test score averages (61.5%) were higher than those reported nationally (52% and 54% for students at 2 and 4 year institutions respectively) by HAPS. Implications: PHRD 307 is an effective course at improving student’s factual knowledge of anatomy and physiology and could serve as a model for programs considering removing anatomy and physiology from the professional curriculum.

Assessing Strategies to Encourage Student Completion of Course and Instructor Evaluations. R. Francis Schlemmer, University of Illinois at Chicago, Leslie A. Briars, University of Illinois at Chicago, Robert J. DiDomenico, University of Illinois at Chicago, Susan L. Pevery, University of Illinois at Chicago, Suzanne M. Rabi, University of Illinois at Chicago. Objectives: Student evaluations of courses and instructors are essential components of assessment. Our college was experiencing low rates of student end-of-course evaluations usually ranging from 20-30%. During the 2008-2009 academic year, the Curriculum Committee assessed three incentives to enhance student evaluation completion: 1) a shortened evaluation form with fewer questions, 2) offering class time to complete the evaluations, or 3) permitting students who completed all evaluations to drop their lowest quiz score. Method: Each incentive strategy was tested in one course per semester for each of the second (P2) and third year (P3) core professional courses. All remaining core courses retained the standard method of evaluation for comparison. Class sizes were 160-164 students. Students completed all evaluations at a secure online site. Students were made aware of the online evaluation format at the beginning of each course. Evaluations were completed by the last day of classes. Results: The overall mean response rate for all evaluations was significantly higher when dropping the lowest quiz (94.3%) or allowing class time (92.2%) compared to using the shortened form (78.9%) or making no modification (81.2%). These results were consistent for both semesters for both P2 and P3 classes. Interestingly, response rates for all core courses were consistently higher than seen in most courses in previous years. Implications: The results of this study suggest that allowing students to drop the lowest quiz score or permitting class time were greater incentives to complete course and instructor evaluations than using abbreviated evaluation forms or using the standard evaluation format.

Biochemistry and Pathophysiology Instruction in US Schools of Pharmacy: Characteristics and Perceptions of Student Preparedness. Danielle L. Cruthirds, Samford University, Teresa W. Wilborn, Samford University, Erika M. Cretton-Scott, Samford University, Mary R. Monk-Tutor, Samford University. Objectives: To describe biochemistry and physiology/pathophysiology instruction in both the pre-pharmacy and Doctor of Pharmacy curricula, including faculty and course characteristics and faculty members’ perceived preparedness of incoming pharmacy students in these content areas. Method: A 20-item online questionnaire was developed and sent to the dean at
95 colleges and schools of pharmacy in the United States (42.1% response). Deans were directed to forward the survey to only one faculty member who could best answer the survey questions. Data were analyzed via Survey Monkey® and Excel® using descriptive statistics. Results: In the professional curriculum, pathophysiology was more likely to be integrated with other course content than was biochemistry (40.0% vs. 12.9% of schools, respectively). The primary andragogy used to deliver both content areas was lecture (84.1% of schools for biochemistry; 74.3% for pathophysiology). Pathophysiology tended to be taught by a larger number of faculty than biochemistry (mean = 4.0 vs. 2.8) and to involve more faculty with a PharmD degree (41% vs. 4%). Almost half of respondent schools felt that incoming pharmacy students did not have an adequate foundation in either biochemistry (51.3%) or physiology (45.9%) to be successful in their program, including some schools where these courses were prerequisites for admission. Implications: Clearer ACPE guidelines regarding the placement and extent of biochemistry and physiology content in the pre-professional curriculum are needed in order to help ensure that pharmacy students have an adequate basic science foundation to succeed in the professional curriculum.

Deaf Strong Hospital: A Role-Reversal Exercise Emphasizing Cultural Competency and Awareness. Jennifer Mathews, St. John Fisher College, Amy L. Parkhill, St. John Fisher College. Objectives: Deaf Strong Hospital (DSH) is a role-reversal exercise. Students are “patients” in a simulated health-care setting in which the “health care professionals” are volunteers from the local Deaf community. DSH aims to teach students about techniques for overcoming communication barriers as well as some of the specific challenges in a medical setting that doesn’t accommodate them is eye opening for students. Patients who are deaf and hard-of-hearing often struggle in a simulated health-care setting in which the Deaf Strong Hospital (DSH) is a role-reversal exercise. Students responded agree or strongly agree. When asked to describe the experience on drug effects. Four scenarios were utilized. All students were directed through the doctor’s office, waiting area, emergency room, to speak and volunteers were instructed to communicate with students in ASL. A typical scenario leads students through a series of stations. The student waits in the reception area until her name is fingerspelled, explains symptoms to a “physician” who provides diagnosis, and visits a “pharmacist” who dispenses medication along with information about the medication. Four scenarios were utilized. All students were directed through the doctor’s office, waiting area, emergency room, a specialist, and the pharmacy. Results: When asked to respond to the statements “My Deaf Strong Hospital experience is likely to positively impact my attitudes and behavior in future interactions with patients who do not speak English” and “I learned valuable information through my participation in Deaf Strong Hospital”, 97% responded agree or strongly agree. When asked to describe the experience 77% responded “educational and interesting”, and 65% admitted frustration. Implications: Participating as patients in a medical setting that doesn’t accommodate them is eye opening for students. Patients who are deaf and hard-of-hearing often struggle in the health care setting. Reversing the roles allows students to experience the frustrations that many patients face.

Integration of Social Networking into Both in- and out-side of the Classroom. Marcos Oliveira, University of the Incarnate Word, David F. Maize, University of the Incarnate Word. Objectives: For the most part today, most non-didactic communication inside and outside the classroom uses email or posts on systems like Blackboard. Although these can be considered contemporary means of communicating with students in comparison with paper and notes posted on bulletin boards, it does not capture the modes of communication used by today’s youth. It is important that instructors strive to communicate with students using generation-relevant means. To assess the impact of social networks as a means of communication inside and outside the classroom, we used Twitter in a biochemistry course and evaluated student perceptions. Method: P1 students (n=101) enrolled in biochemistry completed a 10 question online survey. Results: Most students (81.2%) have used social networking sites like Facebook; however, 80.2% of students had never used Twitter prior to this course. When compared to other communication forms, email edged out the Twitter (38.6% vs. 33.7%, respectively) as the preferred method. Office visits with the instructor was preferred by 27.7% and phone communication was 0%. Daily, almost two-thirds (60.6%) read the instructor’s tweets and about half (54%) read their fellow students’ tweets. About 10% never read tweets. Sixty-nine percent of students would like to have Twitter used in other courses. Implications: Students seem to like the instantaneous communication offered by Twitter but, because of their possible unfamiliarity with it, email was their preferred communication method. Many would like to try it again, and with increased practice, it may surpass email as the preferred communication method with the instructor.

Learning Bridge: A Learning Tool that Positively Affects Student Learning, Preceptor Training, and Faculty Teamwork. Reza Karimi, Pacific University Oregon, Pauline A. Cawley, Pacific University Oregon, Cassandra S. Arendt, Pacific University Oregon. Objectives: A Learning Bridge (LB) tool was implemented to purposefully integrate first professional (P1) year didactic and introductory pharmacy practice experiences (IPPE) curricula and to improve the educational experience for all involved: students, preceptors, and faculty. Method: Faculty generated thirteen LB assignments which were designed based on biomedical, pharmaceutical, and administrative sciences during the P1 year. These assignments were related to the didactic materials covered concurrently and designed to be completed at a pharmacy site. A series of desired behavioral outcomes related to knowledge, skills, attitudes, and values was established in order to assist us in implementing the LB process. Following the last LB assignment, anonymous surveys were conducted to collect students’, preceptors’, and faculty’s feedback to measure the effectiveness of the LB process. Results: Our qualitative and quantitative results indicated that the LB assignments promoted student active learning, critical-thinking skills, self-directed learning skills and students became more confident during their learning conversations with their preceptors. In addition, the LB assignments familiarized preceptors with our P1 curriculum and invigorated preceptors’ knowledge of P1 curricular topics. Furthermore, faculty believed the dynamic of their teamwork was increased by generating LB assignments. Implications: Students, preceptors, and faculty found the LB process to be an integrative and effective student learning tool. Our data indicated that the LB process improved preceptors’ ability to precept our students as a direct result of their increased knowledge of the curriculum. The overall results were sufficiently encouraging to incorporate the LB process into our P1 and P2 curricula.

Most Hepatorenal Toxins Consistently Produce Caspase-activated DNase (CAD)-dependent DNA Ladders and Induce Apoptosis in Vivo. Sidhartha D. Ray, Long Island University. Objectives: While the apoptogenic/necrogenic potentials of hepatorenal toxins are still being examined, relative contribution of various forms of cell death during drug- and chemical-induced organ toxicity continues to be the focus of many debates. Apoptosis plays a critical role in various organ injuries since inhibiting apoptosis also prevents the development of acute liver failure. Adequate importance may not always be placed on pre-oncotic events, particularly when cells appear committed to apoptosis. Method: Since CAD-independent DNA laddering...
has not been convincingly linked to necrosis in vivo, we hypothesize that genomic DNA laddering, remains a viable indicator of pre- oncotic apoptosis. To test this hypothesis, toxic doses (mg/kg) of AAP 500, doxorubicin (DOX) 120, and furosemide (FUR) 500 were administered to 3 mo old male ICR mice and sacrificed 24-48 hours later. Blood and target organs were collected for serum chemistry and genomic analysis. Results: Serum chemistry revealed massive increases in BUN (4-8 fold) and ALT activity (U/L; control 25+2; for AAP: 19,200+895, DOX: 20,500+651, and FUR: 19,600+767) coupled with genomic fragmentation (AAP: 367%; DOX: 319% and FUR: 419%). Although cell death induced by these toxicants predominately reflected late morphology of oncosis, DNA electrophoresis disclosed successful dissociation of CAD-ICAD complex and massive nucleosomal ladderong consistent with prevalence of apoptotic death. Implications: These findings suggest that a preponderance of oncotic over apoptotic features should not lead to the conclusion that necrosis was the predominant mode leading to oncotic cell death. Unless sophisticated methods are developed to separate necrotic, pre-apoptotic and apoptotic cells, precautions must be taken not to overshadow interpretations with bias.

Novel Interactions of β-lactam Antibiotics with Renal Organic Anion Transporter 3 (Oat3). Michael R. Gionfriddo, Wilkes University, Adam VanWert, Wilkes University. Objectives: β-lactams are mainstays in the treatment of infections, and organic anion transporter 3 (Oat3) is a pivotal renal basolateral transporter involved in the elimination of diverse anionic drugs. Our lab recently confirmed the importance of Oat3 in penicillin G elimination; however, the majority of β-lactams have not been assessed for their interaction with Oat3. Thus, this investigation was designed to determine the interaction of penicillin-like antibiotics with Oat3. Method: Oat3-antibiotic interactions were evaluated via inhibition assays with the substrate fluorescein and increasing concentrations of 13 different β-lactams. The in vitro system was Chinese hamster ovary cells expressing mouse Oat3. Empty-vector transfected cells were used to assess non-specific accumulation. Results: Fluorescein transport was saturable on Oat3 (Km of 27.8 ± 6 μM). Fluorescein (10 μM) uptake into Oat3 cells was 33 times that in control cells, indicating adequate transport. Antibiotics demonstrated variable inhibition potencies. Related congeners shared very similar potencies. For example, amoxicillin showed no inhibition, whereas oxacillin inhibited the majority of transport (P < 0.05). The prototypical β-lactam, penicillin G, exhibited an intermediate potency, along with 7 other antibiotics. Implications: Many novel interactions of β-lactams with Oat3 were identified, suggesting that numerous members interact with Oat3 drug substrates. Moreover, antibiotic structural properties correlated with transporter affinity. Accordingly, a future goal will be to develop a model for predicting the affinity of novel antibiotics for Oat3. Oat3 is markedly expressed in the brain and kidney, suggesting that such predictive tools will facilitate predictions of brain residence time and renal exposure.

Promoting Diversity in Pharmacy Though Participation in a College Preparatory Program for Native American Students. Teresa M. Seefeldt, South Dakota State University, MaryJo Lee, South Dakota State University. Objectives: Increasing diversity is a major need for the health care professions. An Institute of Medicine report emphasized the need for diversity enhancement in the health professions to facilitate access to care among minority patients. Pharmacy has also recognized the need to enhance diversity, and aspects of diversity are now included in the pharmacy education accreditation standards. The intent of this project is to describe a college preparatory program for Native American students involving workshops describing careers in pharmacy. Method: The Success Academy program was started at South Dakota State University in 2000 through collaboration with an area Native American high school. The pharmacy workshops are conducted with freshman students who come to the university’s campus to learn about various career options. The pharmacy workshop features a video about the profession, a discussion about pharmacy education and the admissions process, and hands-on activities including filling a prescription. Professional program students are involved in the workshops to facilitate the connections between the high school students and student pharmacists. Results: Between 80 and 100 students participate in the pharmacy workshop over five sessions conducted during the spring semester. Surveys of participating students indicate that the students enjoy the workshop. Overall the Success Academy program has been successful in helping Native American students pursue higher education. Implications: In order to improve diversity in pharmacy, efforts must be made to promote the profession to diverse populations. The Success Academy program can serve as a model for other schools of pharmacy in developing workshops for minority high school students.

Race to Glucose: A Board Game to Assist Pharmacy Student Learning of Metabolic Pathways. Tyler M. Rose, University of Southern Nevada. Objectives: Pharmacy students were assessed in the following areas after the incorporation of a board game into the first year curriculum: 1. Enjoyment of learning. 2. Understanding of how metabolic pathways are (a) regulated, (b) integrated in living tissues, and (c) affected by selected externally-imposed conditions. 3. Familiarity with (a) intermediates, (b) high-energy molecules, and (c) reactions associated with the major metabolic pathways. 4. Assessment performance, versus material learned without the game. Method: P1 pharmacy students were exposed to a board game developed around the gluconeogenesis pathway. Students raced pawns against each other to the end of the pathway by rolling a die and by drawing cards requiring them to answer questions or respond to changes in biological conditions. Students were encouraged to play the game multiple times in teams prior to an assessment. Achievement of the objectives was evaluated by surveying student perceptions of the game as a learning tool and by pre- and post-testing. Results: Of 46 (50%) survey respondents, the majority agreed that the game was helpful in achieving objectives 1, 2a, 2b, and 3a, but not objective 3b. There was a significant increase in post-test performance on questions related to metabolic pathways (p = 0.001), and a non-significant trend toward greater improvement in game-related versus game-unrelated questions (p = 0.081). Implications: P1 pharmacy students consider Race to Glucose to be fun and a helpful tool for learning the intermediates, regulation, and integration of metabolic pathways. In addition, it may enhance student assessment performance in these areas.

Research Funding Expectations as a Function of Faculty Teaching/Administrative Workload. Christopher K. Surratt, Duquesne University, Khalid Kamal, Duquesne University, Peter L. Wildfong, Duquesne University. Objectives: Persistent faculty shortages at U.S. pharmacy schools make recruitment and retention a perennial challenge. Literature suggests that a key retention issue concerns whether a faculty member’s scholarship is compromised due to heavy teaching and/or service workloads. This study assessed U.S. pharmacy faculty perceptions of appropriate expectations of research grant support given their teaching/administrative commitments. Method: Data and opinions were collected using a multiple-choice, cross-sectional survey instrument, e-mailed to 1,047 pharmacy faculty members.
ACPE-accredited schools were surveyed by quasi-random sampling of an equal number of assistant, associate and full professors. The survey gathered information reflective of teaching contact hours, administrative/service workload, major research funding sources, start-up package dollar amounts, and post-tenure changes in teaching/research hours. Statistical analyses used SPSS®, Version 17.0. 

**Results:** 62% of respondents felt that the expected amount of teaching was too much to enable competitive research, while teaching commitments were more likely to increase than decrease after achieving tenure. Full professors differed from associate and assistant professors regarding the funding level perceived acceptable for tenure. New faculty reported start-up funding well below their non-pharmacy school counterparts. Over 25% of social/administrative science faculty indicated having more time for research post-tenure, compared to 10% of the basic/clinical science faculty. **Implications:** This information is anticipated to help pharmacy faculty members gauge their workload and productivity relative to a national peer group. The findings may also assist pharmacy schools in clarifying reasonable teaching and funding expectations for pre- and post-tenure faculty, which may help attract more pharmaceutical scientists to academic pharmacy positions.

**Teaching Pharmacy Students How to Work Within Inter-Professional Teams.** Amber V. Buhler, Pacific University Oregon, Katie Farrell, Pacific University Oregon, David Fuentes, Pacific University Oregon, BJ Scott, Pacific University Oregon, Kelli Shaffer, Pacific University Oregon, Mary Von, Pacific University Oregon.  

**Objectives:** Health professions programs are increasing efforts to teach skills necessary to engage in inter-professional practice. As a part of our Inter-professional Case Conferences, we describe a progressive case study exercise designed to give pharmacy and other health professions students practice in inter-professional communication and teamwork. The objectives were for students to become more aware of 1) the role of the other health professions, 2) discipline-specific goals and terminology, and 3) the value and benefits of inter-professional treatment. **Method:** The progressive case study exercise, developed and facilitated by an inter-professional team of faculty, was attended by students and faculty from our Schools of Dental Health Science, Masters of Health Administration, Occupational Therapy, Pharmacy, Physician Assistant, Physical Therapy, and Professional Psychology. The case follows a patient with Alzheimer’s as she progresses through five health care appointments with a professional from each discipline. At each appointment students are presented with health data gathered by each practitioner. Students engage in peer-teaching regarding discipline-specific interpretation of the information. **Results:** Students (n = 25) indicated they learned: how other disciplines approach an Alzheimer’s patient (strongly agree and agree = 88%); that contributions from different healthcare providers yielded effective approaches to managing patient treatment (SA/A = 88%); and, procedures regarding patient referral to other providers (SA/A = 76%). **Implications:** We present a model case study that could be used by other schools for similar inter-professional training exercises. This study suggests our approach can increase student appreciation for inter-professional exchange and possibly promote future collaboration among our graduates.

**Work in Progress**

**Alpha-eleostearic Acid Inhibits the Growth of Human Prostate Carcinoma PC-3 Cells.** Seher A. Khan, Lake Erie College of Osteopathic Medicine, Katie Krise, Lake Erie College of Osteopathic Medicine.  

**Objectives:** Prostate cancer is a leading cause of cancer-related deaths in men. In this study, we are interested to determine whether alpha-eleostearic acid, a plant derived conjugated linoleic acid, inhibits growth of prostate carcinoma PC-3 cells. **Method:** PC-3 cells were maintained in F-12K medium supplemented with 10% fetal bovine serum, 0.2 mg/ml streptomycin and 200 U/ml penicillin at 37°C and 5°C O2. Upon confluence, cells were plated at a density of 1.6 × 105 cells/well in 6-well plates. Following day, cells were treated (n = 3) with either DMSO (0.1%) or alpha-eleostearic acid (200 μM), followed by incubation for another 24 hours. Cell viability was assessed by trypan blue dye exclusion method. **Results:** According to our preliminary data, alpha-eleostearic acid can markedly decrease the viability of prostate cancer cells. Results of additional studies will be presented in July. Student’s t-test will be used to compare control versus treated group. **Implications:** Simple cell culture techniques may be utilized to engage pharmacy students in laboratory research.

**Bio-Evaluation of Chlorogenic Acids in Natural Products.** Roseane M. Santos, South University, Michael Grenon, South University, Olivia Santos, South University, Peter Adair, South University, Marion Smith, South University, Darcy R. Lima, Instituto de Neurologia Deolindo Couto, Universidade Federal do Rio de Janeiro.  

**Objectives:** Green coffee beans contain the largest quantities of chlorogenic acids (CGA) found in plants. Properly roasted coffee has antioxidant polyphenolic CGAs that have been associated with the prevention of major diseases. Objectives: Identification and quantitation of CGAs in brewed roasted coffee and in human plasma. **Method:** A reverse phase high performance liquid chromatography method has been developed to isolate and quantify the three main CGAs [5-, 4- and 3-caffeoylquinic acids] and lactones, based on ultraviolet absorption and simultaneous detection using a gradient solvent system. **Results:** 5-caffeoylquinic acid is the most abundant CGA and is present in the roasted coffee at a concentration ranging from 0.5 to 7.0 %. This corresponds to 70-350 mg of CGA per 200 ml cup, depending on roasting degree and mix of beans in the tested blend. **Implications:** Currently, many epidemiological studies suggest an inverse relationship between regular to moderate coffee intake (3-6 cups) and the incidence of major public health related diseases such as type-2 diabetes, colon cancer and depression. Our group performed a survey among students to evaluate the relationship between coffee consumption, as compared to alcoholic beverage intake, and the development of signs and symptoms of apathy and depression, with similar results. There is a need to develop a reliable quantitative methodology that provides baseline values of CGAs in brewed coffee and in human plasma. This will allow future phase I and II trials to access potential benefits of each of those compounds in target populations such as diabetics, alcoholics and depressed patients.

**Breaking Boundaries: Pharmacy Students Continued Education through Independent Research Elective.** Rajat Sethi, Texas A&M Health Science Center, Roxana Apacible, Texas A&M Health Science Center, Amber Chun, Texas A&M Health Science Center, Aimee Nguyen, Texas A&M Health Sciences Center, Mike De Luna, Texas A&M Health Science Center, Delwar Hussain, Texas A&M Health Science Center.  

**Objectives:** This study aims to show the benefits of independent research electives in promoting research awareness and continued student education during pharmacy school that may encourage more pharmacy students to pursue post-graduate research opportunities. Rarely do pharmacy students have an opportunity to actively gain research experience, except during their pharmacy school curricula. Most opportunities occur later through individual pursuits in post-graduate residencies or fellowships. However, many
students often graduate and immediately enter the workforce. **Method:** Pharmacy students are educated about the impact scientific research has contributed to improving pharmacy practice and patient care through drug discovery, disease mechanisms, and understanding drug interactions. Student baseline research knowledge regarding techniques and principles are assessed through pre- and post-course surveys. **Results:** Participating in research studies during pharmacy school provided early exposure to the research techniques and methods. This study demonstrates how participating in an independent research elective allows students to apply scientific research techniques, gain an understanding of research writing and procedures, and develop a greater appreciation for research principles. By participating in research electives, students become more familiar with the molecular pathway involvement in pathophysiology and disease development. Additionally, students benefit from the hand-on experience in research techniques e.g. measurement of cardiac functions, bioavailability, pharmacokinetic parameters, etc. **Implications:** Our findings suggest that the independent study course at the college of pharmacy plays an important role in understanding research methods, although confounding variables prevent the strong association with research.

**Effects of Clinical Scenario-Based Exams on Integration of Basic Sciences in Pharmacotherapy Courses.** Srikanth Kolluru, Texas A&M Health Science Center, Darren Roesch, Texas A&M Health Science Center, Angela Peterson-Ford, Texas A&M Health Science Center, David Matthews, Texas A&M Health Science Center, Anna Ratka, Texas A&M Health Science Center. **Objectives:** Our four-semester sequence of eight integrated pharmacotherapy (IPT) courses teaches both basic sciences and clinical concepts. Despite the juxtaposition of basic and clinical sciences, students often report an inability to appreciate and apply basic science knowledge. The objective of this study was to determine if clinical scenario-based exams improve student application and appreciation of the basic sciences. **Method:** Students in the neurology IPT were given exams in which about 50% of the basic and clinical questions were clinical scenario-based. Students were surveyed for comments regarding the scenario-based questions. A post-course student focus group is being held to determine how the scenario-based questions affected students’ appreciation of the basic sciences. In addition, student performance on the exams is being analyzed to see if students performed better on the scenario-based basic science questions. **Results:** Student surveys showed that the scenario-based questions were valued by the students and that these exam questions helped students appreciate and apply the basic science concepts. The post-course focus group will further assess how the scenario-based exam questions impacted student appreciation of the basic sciences. **Implications:** Clinical scenario-based exam questions may provide a new tool to improve student application and appreciation of the basic sciences. Future studies will determine if clinical scenario-based teaching of basic science material in IPT courses further improves student learning and appreciation of the basic sciences.

**Effects of Sodium Butyrate, Curcumin and Genistein on MCT1 expression in Caco2 cells.** Israel Castillo, Nova Southeastern University. Appu Rathinavelu, Nova Southeastern University. **Objectives:** MCT1 (Monocarboxylate Transporter 1) is an essential short chain fatty acid (SCFA) transporter found in the colon of Humans. MCT1 plays an important role in reducing the risk for developing diseases such as colon cancer by transporting SCFAs derived from dietary fiber. A systematic study was conducted to assess the effect of curcumin and genistein on the expression of MCT1 using Caco2 cells. **Method:** RT-PCR technique was used to assess the increase in the mRNA levels of MCT1. **Results:** Sodium butyrate, one of the natural substrates for this transporter, was used as a positive control. When Caco2 cells were exposed to different concentrations (1uM to 10 uM) of sodium butyrate for 48 hrs, the cells were able to significantly increase the mRNA levels of MCT1. Genistein, a phytoestrogen with proven antioxidant and anticancer properties, by itself was not able to increase the expression of MCT1 mRNA within the same period of time and concentrations. Curcumin, a compound with anticancer properties, showed a significant increase in the MCT1 mRNA expression when the Caco2 cells were treated with 10 uM for 48 hrs. Futhermore, when curcumin (10 uM) was combined with sodium butyrate (1 uM) MCT1 expression increased but it was no more than what was seen with curcumin alone. Interestingly, Curcumin - Genistein combination produced the maximum increase in MCT1 expression compared to other treatments. **Implications:** Thus, our study suggests that, by suitably combining Curcumin and Genistein, under the in vitro conditions, healthy functions of colonocytes can be improved via increasing the expression of MCT1.

**Integrative Learning and Assessment: An Effective Tool to Promote and Assess Student Learning.** Reza Karimi, Pacific University Oregon, Fawzy Elbarbry, Pacific University Oregon, Jeff Fortner, Pacific University Oregon. **Objectives:** An “Integrative Learning and Assessment (ILA)” activity was generated to promote student teamwork communication, self-directed learning skills, active learning skills, facilitate student learning of didactic materials and assess student learning. **Method:** A series of biomedical and pharmaceutical sciences “clues sheets” were generated by faculty and distributed among P1 students during two pharmacuetics classes. Students were asked to build student pairs. Each student pair interacted with others to identify two more pairs with clue sheets alluding to a mutual drug. These identified 3 pairs built a group which comprised of six students. Each group was directed to use an online assessment activity that included 10 biomedical and pharmaceutical sciences essay and multiple choice questions. The student groups were encouraged to discuss each assessment question and submit their online responses for a grading process. A survey was implemented by faculty and completed by 66 students at the conclusion of the ILA activities. **Results:** Our initial quantitative survey results provided compelling evidence that students were enthusiastic about the ILA activity and agreed that the ILA tool promoted student teamwork communication (97%), self-directed learning skills (92%), active learning skills (97%), and facilitated their learning of the didactic materials (91%). In addition, the initial qualitative results indicated that the ILA activity made their learning productive and fun. **Implications:** Focused integration of didactic materials and teamwork with peers is welcomed by students. This integrative teamwork activity is easy to construct and implement. The ILA activity promotes and assesses student learning, two important components of a learner-centered educational environment.

**Ozone-Induced Enhanced Sensitivity to Changes In Mammalian Cardio-Respiratory Physiological Parameters.** Rajat Sethi, Texas A&M Health Science Center, Rama Surya Prakash Perupu, Texas A&M Health Science Center, Carlos Garcia, Texas A&M Health Science Center, Roxana Apacible, Texas A&M Health Science Center, Vishal Sethi, King High School. **Objectives:** To measure the chronic and sub-chronic time-dependent ozone (O3) exposure effects in arterial oxygen saturation, heart rate, breath rate and breath...
distension. **Method:** Cardio-respiratory parameters were measured using a Rodent Ox apparatus (StarrLife Sciences) in age-matched controls and rats exposed to 0.8 ppm O3 for 8 hours/day for 28 and 56 days. Results were tracked and monitored for variations within individuals, and groups. **Results:** The arterial oxygen saturation dropped, while the heart rate, breath rate, and breath distension or breathing effort increased in ozone-exposed rats. **Implications:** These data reveal that: 1) chronic and sub-chronic ozone exposure alters the cardio-respiratory system of mammals; 2) populations living in air polluted environments are at risk of developing negative cardio-respiratory changes that may result in heart disease or ischemic cerebral accidents particularly in individuals with cardiovascular disease risk factors. Additionally, this data is relevant to air pollution regulatory policies that dictate the acceptable levels of ozone in the stratosphere with a focused emphasis on bringing down the health costs associated with cardiovascular disease and mortality.

**Regulatory Role of Caveolin 1 and Caveolin 3 in Ozone Induced Cardiotoxicity.** Rajat Sethi, Texas A&M Health Science Center, Rama Surya Prakash Perepu, Texas A&M Health Science Center, Carlos Garcia, Texas A&M Health Science Center, Amber Chun, Texas A&M Health Science Center, Vishal Sethi, King High School. **Objectives:** These experiments were designed to understand the underlying mechanisms for enhanced cardiovascular dysfunction in rats subsequent to chronic O3 exposure. **Method:** Male rats were housed in a gas chamber for 8 hrs/day and exposed to filtered air (0 ppm of O3) and/or O3 (0.8 ppm) for 4 and 8 weeks. After the completion of the exposure protocols, rats were sacrificed by decapitation and the extracted hearts were homogenized. The homogenate was centrifuged at 48,000g for 30 min, the supernatant and the membrane pellet were used to estimate the free and membrane bound protein content of Caveolin-1 and Caveolin-3 using Western blot technique. The optical density for these protein bands was measured and compared in hearts from air and O3 exposed animals using the Biorad Molecular Imager ChemiDoc XRS. **Results:** Our preliminary results demonstrated decreased and increased protein contents of caveolin-1 and caveolin-3 respectively in hearts from O3 exposed animals compared to air exposed. Although, these changes in caveolin protein content suggest enhanced death signaling in ozone exposed rats which can lead to increased cell death and attenuated myocardial function via the p38MAPK pathway, more experiments are being conducted in our laboratory to confirm our preliminary results.

**The Role and Effectiveness of Virtual Laboratory Exercises as a Pharmaceutical Sciences Learning Tool.** Marketa Marvanova, Belmont University, Paul J. Henkel, Meharry Medical College. **Objectives:** This study examines the role and effectiveness of virtual laboratories (VL) in facilitating student learning within a classroom-based microbiology course in a Doctor of Pharmacy (Pharm.D.) curriculum. **Method:** A Pharm.D. student cohort (1 of 2) completed VL exercises in Microbiology and Immunology (P1, spring). This VL demonstrated gram staining and various biochemical tests for identification/diagnosis of human pathogenic bacteria. The students (N=63) completed a post-VL evaluation consisting of 16 Likert-type questions. Factor analysis was performed and factors were created for perceived quality, learning, and applicability of the VL experience. **Results:** Preliminary results indicate that a high level of interest in microbiology is significantly associated with high ratings on the quality factor (Odds Ratio (OR) 3.14, 95% CI 1.11-8.92). High ratings on the quality factor, after adjustment for level of interest, are significantly associated with high ratings on the learning factor (OR 8.79, 95% CI 2.67-28.85). High ratings on the learning factor, after adjustment for the quality factor, were significantly associated with high ratings on the application factor (OR 70.4, 95% CI 8.02-618.3). Cohort results (2 of 2) from Spring 2010 will be included in final tabulations. **Implications:** Economic and time constraints inherent to pharmaceutical sciences in the Pharm.D. curriculum can prohibit or limit the inclusion of extensive physical labs in microbiology. With the exponential growth in the availability and quality of low- or no-cost multimedia learning aids, VLS might be used to facilitate student learning, but their role, processes and potential value must be better understood.

**Use of Written Assignments in Large Lecture Classes.** Gail Goodman-Snithoff, Albany College of Pharmacy and Health Sciences. **Objectives:** Writing is not only an essential part of communication, but, in the classroom, it is a valuable way to enhance understanding of course content. Large classes decrease writing opportunities, however, because assessment requires an inordinate amount of instructor time. To overcome this impediment, we instituted Calibrated Peer Review (CPR) in Immunology. CPR requires students to write, perform three calibration assignments using a rubric, review the work of other students anonymously and assess their own work. Student success in mastering these assignments was measured. **Method:** P1 PharmD students were required to write three short essays on topics related to the course material and submit their writing to the CPR website at UCLA. They were then trained to use a rubric to use faculty generated calibration essays, reviewed three peer essays and
assessed their own essay. Students were assessed for their ability to write a clear essay and to use a rubric for peer and self-assessment. **Results:** 310 students at two campuses participated in three CPR assignments. As they became used to the format their skills at using rubrics for assessment of the essays increased as measured by their scores in each section of the assignment. In summary, total score, text score and reviewer competency increased, while inter-reviewer variability decreased over the course of the term. In addition, students with significant difficulty in writing were identified and referred for remediation. **Implications:** CPR teaches students in large classes to “write to learn” and provides an opportunity for them to develop self-assessment skills.

**CHEMISTRY**

**Completed Research**

Can Learning for Learning Sake Provide Measurable Gains in Knowledge? Ehren C. Bucholtz, St. Louis College of Pharmacy, Claude J. Gaebelen, St. Louis College of Pharmacy. **Objectives:** To compare a grade-based to a learning-based organic chemistry laboratory experience in terms of final lab grade and subjective ratings of concept learning. **Method:** In the fall 2008 semester, weekly quizzes and an end-of-term laboratory exam accounted for 25% of the final course grade in an organic chemistry course (High Stakes). In the fall 2009 semester, a self-assessment of learning was substituted for the quizzes and laboratory exams, and the weighting decreased to 10% of the final grade (Low Stakes). In addition, lab instructors conducted discussions of concepts. At the end of the semester a survey of attitudes about lab and a bonus end of semester lab exam were given. **Results:** Laboratory exam scores for the Low Stakes Group (58.4 ± 13.5 %) were significantly lower (P<0.05) than the High Stakes Group (69.3 ± 12.1 %). Further, the distribution of Low Stakes scores was more variable (relative standard deviation of 23.1% versus 17.3% for the High Stakes group), due mainly to fewer scores below 50% in the High Stakes group. Even though the Low Stakes students fared poorer on the exam, they reported gaining more knowledge and a better understanding of laboratory concepts. **Implications:** Although increasing the contribution of laboratory performance to the final grade improves test performance, a low stakes approach may enhance the subjective value of the laboratory experience to students.

**Design and Evaluation of an Audience Response System Driven Tournament-style Game.** Robert M. Riggs, Samford University. **Objectives:** Evaluate the effectiveness an audience response system driven tournament-style game as a learning tool in a second semester Medicinal Chemistry course. **Method:** The questions for the game were developed using the software from an audience response system. Question topics included acidity, basicity, identification of functional groups, and structure-activity relationships. A class of 123 students, divided into 24 groups, participated in the game. A tournament bracket and the rules for the tournament were provided to the class before the game. Two groups competed at a time, with each student of the competing groups providing an answer to a game question with a response pad. The group that responded with the highest percentage for the correct answer won the round. The quantitative evaluation was conducted by using pre-game and post-game questions embedded into pop quizzes. The qualitative evaluation was conducted using an 8 question 5-point Likert scale survey. **Results:** The post-game question scores for all students were statistically significantly higher than the pre-game question scores. The survey results showed a trend toward differing perceptions of the game as a learning tool and as an enjoyable classroom activity between the students whose group had won in the first round of the game and those who had lost in the first round. **Implications:** The game promoted active learning in the context of an enjoyable course activity.

**Design, Development, and Implementation of a Professional Pharmacy Curriculum in Iraqi Kurdistan.** Andrew A. Webster, Belmont University, Cathy H. Turner, Belmont University, Abdullah A. Alnakshabandi, Hawler College of Pharmacy, Erbil, Iraq. **Objectives:** In an effort to address critical gaps in its higher education system resulting from more than 30 years of wars and embargos the Kurdistan Minister of Higher Education sought advice on curriculum development in 10 areas. Belmont University School of Pharmacy (BUSOP) was identified to provide assistance in the design and development of a contemporary pharmacy curriculum. **Method:** In the summer of 2009 a member of the BUSOP faculty traveled to Iraq to join the curriculum reform committee of the Hawler College of Pharmacy. The committee recognized a curriculum must be designed in such a way to provide students with skills and abilities to address present and future needs. The committee addressed numerous topics related to curriculum reform. Following a needs assessment we evaluated the current curriculum. This process identified needed curriculum updated which were recommended to the Minister of Higher Education. **Results:** A dual degree professional program (B.S. & Pharm.D.) was designed. The results were presented to the Minister of Higher Education and the deans of four Kurdish pharmacy colleges. Upon acceptance the curriculum was refined by roundtable meetings of the Kurdish leadership which led to curriculum implementation in November 2009. **Implications:** In a short period of time a contemporary pharmacy curriculum was designed and implemented in the Kurdish region of Iraq. This curriculum introduces the concept of clinical pharmacy practice to the devastated country of Iraq. The impact on the health of the population is beyond calculation.

**Determination of the Abuse Potential of Daytrana® Transdermal Patches.** Jeremy P. Nickell, Lipscomb University, Rachel D. Stephens, Lipscomb University, Michael W. Fowler, Lipscomb University, Susan L. Mercier, Lipscomb University. **Objectives:** Daytrana® (transdermal methylphenidate), approved by the FDA in April 2006, is currently the only FDA approved transdermal drug delivery system for the treatment of attention-deficit/hyperactivity disorder (ADHD). Daytrana® is designed to provide a controlled release of methylphenidate (MPH) over nine hours with once daily application, extending treatment duration to eliminate more frequent dosing and improve patient compliance. The abuse potential of stimulants is of concern, resulting in all stimulant medications being classified as controlled substances and closely monitored by the DEA as Schedule II drugs. Our studies focus on investigating the ease of extractability of MPH from used Daytrana® patches and the purity of our extraction. **Method:** Daytrana® patches were stirred in selected solvents (methanol, ethanol, and isopropyl alcohol) and time points were collected over a 3 hour period. Quantification of MPH extraction yield and purity was performed via HPLC analysis using the appropriate standards. **Results:** MPH was extracted within 5 min of stirring in all three solvents. Ethanol provided the highest MPH yield by extraction, followed by methanol and isopropyl alcohol, respectively. **Implications:** Sixty-four percent of the original MPH content in a Daytrana® patch remains after patient use. Given this estimation and the ease of extractability of MPH, used Daytrana® patches not only pose an abuse risk, but can be a potential health hazard to children and
Drug Wars: A Comprehensive Computerized Medicinal Chemistry Case Study Focusing on the Treatment of Asthma. Victoria F. Roche, Creighton University, S. William Zito, St. John’s University. Objectives: To produce a new computerized medicinal chemistry case study (Drug Wars) that reinforces the chemical basis of therapeutic decision-making in the treatment of intermittent and persistent asthma. Method: A clinical scenario featuring Star Wars characters was designed to reinforce structure-activity relationships of short- and long-acting beta adrenoceptor agonists and inhaled corticosteroids used in the treatment of asthma. Learners conduct chemical and pharmacological activity analyses of structure choices to arrive at appropriate therapeutic recommendations based upon patient-specific needs. Drug names are revealed only after chemical analysis validates or refutes the choice. The case was programmed with Visual Basic v.6. Case screens reinforce accurate answers and allow users to self-correct errors in reasoning. Humor, music, and graphics enhance student appeal. A CD containing an executable Drug Wars file is available to colleagues at no cost. Results: Pharmacy students across the country have validated the value of computerized medicinal chemistry case studies in enhancing meaningful learning. The Drug Wars case was viewed as an effective learning tool that reinforced the importance of chemistry to therapeutic decision-making. Implications: The Drug Wars computerized case study is the first to address the exacerbation and treatment of a disease with two different pharmacologic classes of therapeutic agents. As a time-tested learning tool that students actually enjoy using, this computerized case will advance therapeutically-grounded chemistry education in all pharmacy programs that choose to use it.

Student Perceptions of a Science-Based Drug Information Poster: Groundwork for an Interdisciplinary Elective Course. Ashok E. Philip, Union University. Objectives: The objectives of this study were to assess student perceptions of an interdisciplinary drug poster and determine the usefulness of offering an interdisciplinary drug poster elective to facilitate the active learning process of pharmacy students. Method: An interdisciplinary drug information poster of top 100 branded drugs by total prescriptions in 2008 was developed using DailyMed. The poster included brand and generic names, chemical structures, highlighted pharmacophores, mechanisms of actions, FDA approved indications, and black box warnings. The poster was introduced to 2nd year pharmacy students at the beginning of a medicinal chemistry course and displayed outside the lecture hall as well. Periodical discussions were held analyzing different aspects of the poster. At the end of term, a survey was administered to assess student perceptions regarding the quality of the poster and their interest in a poster elective. Results: The survey response rate was 99% (124 of 125). Majority of students (94%) agreed that participating in an interdiscipline poster elective will be a beneficial active learning exercise. 73% and 82% agreed with superior quality of basic science and clinical information, respectively, presented in the poster compared to commercial drug cards. Also, a small percentage of students highlighted their interest in including adverse effects (37%) and drug interactions (20%). Particularly, majority (94%) of students indicated that the poster will help study for NAPLEX. Implications: Educational posters provide information, stimulate interest, fuel conversations and provide a great active learning technique. As evidenced through this study, majority of students would like to participate in an educational poster elective.

Work in Progress

A Longitudinal, Objective Analysis of Student Pharmacist Writing Samples. G. Scott Weston, Harding University, Forrest L. Smith, Harding University; Carol Kell, Harding University; Jean Anne Mire, Harding University. Objectives: The objective of this study is to assess the development of writing skills in students as they progress through a professional pharmacy curriculum. Method: A randomized sample of students from the HUCOP Class of 2012 was selected as the study cohort. Permission from each student was obtained for use of their materials. No personally identifiable information was used as part of the data analysis process. Cohort student writing samples submitted during the application and orientation process were used as a benchmark for the study. Additional writing samples from the study cohort from the first- and second-year writing assignments performed as part of the Mentor-Mentee Program and Introductory/Advanced Pharmacy Practice Experiences have also been collected and analyzed. Analysis of all writing samples is being performed using accepted, objective measures of readability and grade level, such as the SMOG index and the Flesch-Kincaid grade level test. Results: Preliminary data analysis suggests an overall improvement in the writing skills, as measured by the SMOG index and the Flesch-Kincaid grade level test, of the students in the study cohort. Implications: The data generated by this study will be used to help develop and refine not only the Patient Counseling & Communication course, but also writing assignments that occur in courses throughout the HUCOP curriculum.

An Improved HPLC Method for Identification and Quantitation of Polyamines as Benzoylated Derivatives. Rajat Sethi, Texas A&M Health Science Center; Sairaghuever Chava, Texas A&M Health Science Center; Sajid Bashir, Texas A&M Health Science Center, Mohammad T. Nutan, Texas A&M Health Science Center, Mauro E. Castro, Texas A&M Health Sciences Center. Objectives: To develop a chromatographic method in the identification of polyamines. A simple reversed phase HPLC method was developed for the determination of polyamines in their benzoylated form from external known standards. In the optimization phase a number of parameters were examined. These are: (1) Solvent used in their extraction; (2) Solvent used in their elution; (3) Mode of derivatization and extraction and (4) other instrument parameters. Method: The polyamine concentration in rat heart tissue (from rats induced to 0.8 ppm ozone) was determined. The extracted polyamines were derivatized using benzoyl chloride with 1,6-diamino hexane as internal standard and extracted using either diethyl ether or chloroform and separated on a C18 column. The samples were eluted in either methanol or acetone and detected using a UV detector (λ =229 nm). Different gradient profiles were used (4 different methods) ranging from 40 minutes to 15 minutes. Results: Preliminary data suggests that Method “4” gave the highest peak resolution (70% of solvent A to 100% of solvent A for 2 minutes, 100% of solvent A for 13 minutes and 100% of solvent A to 70% of solvent A for 2 minutes) with acetone as elution solvent. The ratio of cadaverine to internal standard was 1000:1 with methanol to 54:1 with acetonitrile. Preliminary data analysis suggests that the “Method 4” was the most effective in separating the polyamines. Implications: An accurate and sensitive method for the determination of polyamines has been developed.

Auxiliary Labels - Just there for Decoration? Robin M. Zavad, Midwestern University Chicago College of Pharmacy, Valerie L. Ravenna, Midwestern University Chicago College of Pharmacy. Objectives: Provision of patient-centered care includes the use of...
auxiliary or patient/drug labels. The study objective was to assess students’ baseline knowledge of medicinal chemistry as part of the scientific foundation for the use of specific auxiliary labels and then evaluate their knowledge upon course sequence completion. **Method:** A questionnaire was developed to evaluate student knowledge related to the scientific rationale for the use of 13 specific auxiliary labels. In addition to demographic information, the survey included multiple choice and open ended items to identify previous auxiliary label exposure, previous auxiliary label counseling, and identification of the correct chemical rationale for label use. The survey was administered prior to the start of the medicinal chemistry sequence to establish baseline knowledge. A post-course sequence survey is anticipated. Survey results will be analyzed at the cohort level. **Results:** Over 80% of respondents (N=190/194) have pharmacy work experience, 75% of which were employed for >1 year. More than 60% of respondents saw 11 of the 13 labels used, however only heard counseling points offered for 5 labels. Only 41% of the students correctly identified the chemical principle for the “Do not Crush/Do not chew” label. For other labels the correct response was identified by <=5% of the respondents. **Implications:** Provision of quality patient-centered care requires that the pharmacist understands the scientific rationale for inclusion of auxiliary labels on prescriptions. Optimal therapeutic outcomes can only be achieved if patient compliance is maximized and potential drug-drug, drug-food and/or drug-nutraceutical interactions are minimized.

**Chemical Defenses of the Green Alga Penicillus Dumetosus.** Melany Puglisi-Weening, Chicago State University, Robin Carney, Chicago State University, Valerie Paul, Smithsonia, Chintan Brahmbhatt, Chicago State University, Lance Martin, Martin-Protein LLC. **Objectives:** Isolate and identify novel antimicrobial compounds from the green algae using Penicillus dumetosus using ecologically relevant assays against a panel of potentially harmful marine fungi. **Method:** Penicillus dumetosus was collected from Long Key, Florida. Fresh plant material was extracted in 1:1 dichloromethane:methanol for 12-24 hours. The resulting extract was partitioned into nonpolar and polar materials and assayed against one or more members of a diverse panel of ten co-occurring species of fungi belonging to the Ascomycota isolated from the coastal waters of Fort Pierce and the Florida Keys. The crude extract was partitioned via bioassay-guided fraction using flash and high pressure column chromatography. Metabolite characterization will be accomplished using one- and two-dimensional NMR and mass spectrometry at Chicago State University. **Results:** We conducted a broad survey of the crude extracts from common algae in the seagrass beds of the Florida Keys activity against a broad panel of co-occurring marine fungi. Our results show that species in the genus Penicillus exhibit potent antifungal against several marine fungi including L. thalassia and several strains of the saprophyte Dendryphiella salina. Bioassay-guided fractionation indicates that there several antifungal metabolites present in the crude extract that exhibit selectivity against specific fungi. **Implications:** Penicillus dumetosus produces an array of antifungal metabolites that prevent infection from marine pathogens and saprophytes.

**Development of an Academic Track at the University of Texas College of Pharmacy.** Patrick J. Davis, The University of Texas at Austin. **Objectives:** The objective of our current effort is to define a formalized “Academic Track” for Pharm.D. students to explore the various aspects of academic pharmacy in a structured program with increasing depth and breadth of involvement. The overall goal is to attract a larger number of graduates into the academy. **Method:** The approach we used involved (1) identification of existing formal and informal efforts ongoing in the College to provide students exposure to teaching; (2) developing new approaches with increasing depth of involvement and breadth of exposure; and (3) formalizing these processes into an academic track with escalating involvement in teaching. **Results:** The Academic Track consists of four hierarchical components: Tutor: Tutors provide one-on-one academic support for students identified (including self-identified) as having difficulty with specific coursework. Academic Assistant: AA’s have course-specific duties, including group tutoring, review sessions for upcoming exams and debriefing on completed exams, technical and logistics support in the classroom. Advanced Academic Assistants: AAA’s have responsibilities similar to Graduate Student Teaching Assistants, except that they cannot grade. AAA’s provide course-specific support such as laboratory supervision, leading discussion sections, and providing feedback through our ePortfolio system. Academic Interns: The P4 Academic Internship represents an elective APPE in which interns explore learning theory, evaluation of student learning, assessment of teaching, small-group teaching & lecturing, accreditation, etc. The College averages ~15 Academic Interns per year across our four campuses. **Implications:** It is anticipated that this effort will have a positive impact on the number of our graduates attracted to the academy, either in full or part-time positions.

**Evaluation of a Beta-Lactam Structure Activity Relationship Game.** Kimberly M. Beck, Butler University. **Objectives:** The objective of this study was to evaluate if the addition of an active learning game to the standard lecture material improved students’ perceived ability to differentiate clinical attributes of individual beta-lactam antibiotics based on structural features. **Method:** We created an active learning game involving foam board posters of the penicillin and cephalosporin pharmacophores and moieties that extend off the pharmacophore which confer various clinical characteristics including oral activity, β-lactamase resistance, and extended spectrum. The game was introduced in two hour long Applied Learning Sessions. Divided into groups of five students, each group was given a clinical case and then constructed an appropriate penicillin or cephalosporin from the foam board pieces available. The other groups would work on which penicillin or cephalosporin they would use and decide if the foam board created structure was appropriate. This activity augmented the lecture portion of the course. The evaluation of this activity was designed to assess perception of understanding of key concepts in beta-lactam structure activity relationship. Pre- and post-activity questionnaires were given and assessed using a Likert scale. The post-questionnaire included additional satisfaction assessments. Post-activity assessment of knowledge was obtained via multiple choice questions. **Results:** Results from the post-game activity assessment in comparison to the post-activity assessment from the previous year in which the Applied Learning session included traditional case study activities will be presented. Results from pre- and post-activity questionnaires will be reported. **Implications:** Incorporation of an active learning game may increase learning of medicinal chemistry concepts.

**Factors Influencing Student Participation in a Laboratory Research Elective at a Three-Year College of Pharmacy.** Erik Jorvig, University of Southern Nevada, Tyler M. Rose, University of Southern Nevada, Darla Zarley, University of Southern Nevada, Surajit Dey, University of Southern Nevada. **Objectives:** The objective of this study is to understand factors, both positive and negative, which enable or impede pharmacy student participation in a laboratory research elective course during the P3 year at a three-year College of Pharmacy. **Method:** The qualitative research study was conducted by
Novel Thiocromane Ring Modified SHetA2 Analogs Inhibit Growth of ER Positive Breast Cancer Cell MCF7. Shengquan Liu, Touro University, Maggie Louie, Touro University. Objectives: Preclinical studies have demonstrated that SHetA2 analogs we synthesized previously can induce the apoptosis of cancer cells while sparing normal cells, and exhibit anticancer activity in vivo. We hypothesized that other SHetA2 analogs with modified thiocromane ring inhibit cancer cell growth. Our objectives are (1) design and synthesis of novel SHetA2 analogs, and (2) in vitro evaluation of the SHetA2 analogs for inhibition of the growth of ER positive breast cancer cell line MCF7. Method: Compounds were prepared by known methods. These compounds were evaluated for their ability to inhibit the growth of ER positive breast cancer cell line MCF7. The cells were plated in 96 well plates and treated with varying concentrations (10^-12 M to 10^-4 M) of each compound. Cell growth was analyzed using an MTT assay 2, 4 and 6 days after treatment against vehicle control. Results: We have developed a novel procedure to obtain a variety of SHEA2 analogs. As expected, MCF7 cell growth was inhibited by all of SHEA2 analogs synthesized. Compared to untreated control after 4 days, the growth inhibition at 10^-5 M of compound 1-6 are 27%, 72%, 43%, 58%, 44% and 51% respectively. The most potent compound is compound 2 (72%). Implications: Six SHEA2 analogs were designed, synthesized and evaluated in vitro. These compounds represent a novel class of cancer prevention agents. These data can be used for systematic study of structure activity relationship of SHEA2 analogs, which would benefit the design of more potent and less toxic cancer prevention agents endowed with a new mechanism of action.

Synthesis of novel 17beta-estradiol dimers via Sonogashira Coupling. Carolyn J. Friel, Massachusetts College of Pharmacy and Health Sciences-Worcester, Erica Adjei, Massachusetts College of Pharmacy and Health Sciences, Samuel Ameyaw, Massachusetts College of Pharmacy and Health Sciences, Abdul Bello, Massachusetts College of Pharmacy and Health Sciences, Frank Chen, Massachusetts College of Pharmacy and Health Sciences, Kerry Heinzleman, Massachusetts College of Pharmacy and Health Sciences, Divine Kebulu, Massachusetts College of Pharmacy and Health Sciences, Lindsay Stover Massachusetts College of Pharmacy and Health Sciences, Niyati Vakil, Massachusetts College of Pharmacy and Health Sciences. Objectives: The objective of this research is to synthesize novel 17beta estradiol dimers using aren linkers of various lengths. These novel compounds were synthesized in a 15 week medicinal chemistry laboratory elective. Compounds that prevent estrogen receptor dimerization may have therapeutic value for the treatment of hormone dependant cancers. Method: Eight students each synthesized one novel dimeric estradiol using palladium catalyzed Sonogashira coupling. 17alpha-ethyl estradiol was coupled with a series of diiodoarenes (phenyl, biphenyl, terphenyl) first using standard Sonogashira reaction conditions (palladium catalyst, copper cocatalyst, base). Variations of the standard reaction conditions were required. Purification of the final compounds was accomplished via column chromatography and recrystallization. Results: Reaction conditions, percent yields, proton and carbon nuclear magnetic resonance (NMRs) of all final compounds will be presented. Implications: This report describes the novel synthesis of estradiol dimers synthesized via Sonogashira coupling. Steroid dimers are of interest for their ability to block the necessary step of steroid receptor dimerization. The ability to block nuclear receptor dimers has potential therapeutic value in treating hormone dependant cancers.

Use and Perceptions of Asynchronous Audio-Visual Technologies in Pharmacy Schools in North America. G. Scott Weston, Harding University, Kathleen S. Martin, University of the Incarnate Word. Objectives: The objective of the study is to assess the degree of usage of asynchronous audio-visual technologies (e.g. “lecture capture”, podcasting, etc.) in schools of pharmacy in North America. Additional goals include the identification of faculty, administrative, and student perceptions regarding the adoption of these technologies and lessons learned from those who are currently using these tools. Method: Administrators from each school of pharmacy in North America are being contacted directly via phone and email to assess the current usage of asynchronous audio-visual technologies within their pharmacy programs. An anonymous 20-question survey assessing perceptions of these technologies is being made available to all North American pharmacy faculty, all North American pharmacy school administrators, and students from selected schools of pharmacy. Results from the survey are being analyzed in Microsoft Excel and SPSS. Results: Preliminary data suggest that less than one-third of North American schools of pharmacy are currently using asynchronous audio-visual technologies within their curricula. Implications: The results of our survey should give a broad picture of the current level of adoption of asynchronous audio-visual technologies in pharmacy schools in North America, as well as to highlight any concerns about or lessons learned from the implementation of these tools.

CONTINUING PROFESSIONAL EDUCATION
Completed Research

Evaluating the Effectiveness of Three Mass Marketing Attempts for a Continuing Pharmacy Education Program. Ruth H. Bruskiewicz, University of Wisconsin – Madison, Amy M. Childs, University of Wisconsin – Madison, Anna Legreid Dop, University of Wisconsin – Madison. Objective: A concern among continuing pharmacy education (CPE) providers is how to effectively market to pharmacist learners. Barriers to achieving a favorable return on marketing attempts are numerous but could include generational differences of pharmacists in mailing databases and oversaturation of commercial marketing. The purpose of this study was to evaluate the effectiveness of marketing attempts for a recent CPE program. Method: Pharmacist learners in a CPE provider database were sent an announcement for a program through three attempts: 1) a comprehensive brochure; 2) a postcard; and 3) an email. Each attempt was assigned a separate weblink to track which method generated the
most visits to the program website. The frequencies of visits between the three marketing attempts were analyzed. Results: One hundred and eighteen pharmacists enrolled in the program. There were 141 visits; 21 of which were from generated from the brochure (14.9%), 26 from the postcard (18.4%), and 94 from the email (66.7%). There was statistically significant differences when the frequency of visits generated from the email were compared with both the brochure (p=0.0001) and postcard (p=0.0001). In the four weeks following each marketing intervention, there were seven visits after receipt of brochure, 57 after email, and 25 after postcard. Implications: It was not possible to determine the return on investment for enrollment into the CPE program however; email marketing to pharmacist learners generated more visits to a CPE program website than the brochure or postcard. The cost effectiveness of the email intervention warrants more investigation as a marketing tool.

Work in Progress

A Continuous Professional Development (CPD) Student Program. Richard O’Broo, St. John Fisher College, Asim Abu-Baker, St. John Fisher College, Christine R. Birnie, St. John Fisher College, Jill E. Lavigne, St. John Fisher College, Mary M. Valesano, St. John Fisher College. Objectives: To develop, pilot and evaluate a CPD process among incoming P1 students. Method: A CPD process was developed by a faculty committee and implemented with the incoming P1 students during their orientation in August, 2009, with completion scheduled for March, 2010. Students were asked to follow a 4 step process: reflection and self assessment, creating a plan, carrying out the plan and evaluating the plan. Faculty advisors (N = 25) reviewed and approved each step. To help students self assess their learning needs, we adjusted the typical CPD process by guiding students to identify a learning outcome from a class syllabus or from a personal interest or volunteer activity. After completion of the first step, the students completed an on-line survey to assess the time required to complete the step and then identify the source of the learning objective. Faculty will be assessed in April to obtain their feedback on the process. Results: Students completed a survey (40/75) indicating that the majority of learning outcomes composed were personal (24/39), with the remainder coming from courses in their P1 year. The majority of student (31/39) reported that it took 30 minutes to 3 hours to construct the learning outcome. Implications: Students’ completing a simple CPD process is one method to expose future pharmacists to Continuous Professional Development. Workload issues for students and faculty are concerns when implementing a school wide program.

A Current Assessment of Clinical Pharmacy Services in Louisville, Kentucky, A Collaborating Opportunity. Misty M. Stutz, Sullivan University, James D. Nash, Sullivan University. Objectives: To assess the needs and interests of pharmacists for continuing education and skills development. Additionally, to determine the need for implementation of clinical services within pharmacies offered with support from students at Sullivan University College of Pharmacy (SUCOP). Method: A survey was developed through the Office of Experiential Education (OEE) and the International Center for Advanced Pharmacy Services (INCAPS) at SUCOP and distributed via US postal service to 240 practitioners throughout the greater Louisville area in November of 2009. Results: An overall response rate of 27% was observed. Seventy-five percent of respondents practice in community pharmacy, 15% in hospital pharmacy, 5% in ambulatory care, 2% specialty clinic, and 3% in long term care. Of the clinical services offered, Medication Therapy Management (MTM) services were asked in several survey questions. While 88% of pharmacists feel. MTM is important or very important to the future or pharmacy, only 31% of respondents are currently providing such services. Additional services offered throughout the community include immunizations (28%) and diabetes management (17%). Many surveyed (75%) have an interest in developing a clinical service at their site with the assistance of the college of pharmacy. Implications: Based on a survey distributed to practicing pharmacists in the Louisville, KY metropolitan area, pharmacists are interested in partnering with SUCOP to develop and implement new clinical services within their practice site. OEE and INCAPS will use this information to develop training for these pharmacists and to provide student assistance where needed.

Application of Continuing Professional Development (CPD) through Continuing Education Activities. Cora Lynn B. Trewet, The University of Iowa, Carol L. Abel, American Pharmacists Association, Nancy Fjortoft, Midwestern University Chicago College of Pharmacy, Deborah Ruddy, American Pharmacists Association. Objectives: 1) To evaluate the effectiveness of print-based instruments designed to guide the pharmacist through the Continuing Professional Development (CPD) process to plan and participate in the APhA annual meeting. 2) To evaluate the sustained learning and implementation into practice of the educational activities completed by pharmacists. 3) To determine if use of the instruments effects the pharmacists’ level of awareness of the four cycle CPD model. Method: APhA is exploring ways to implement CPD through the use of CPD resources available for pharmacists. Pharmacists were invited to participate in an intervention designed to facilitate their CPD in conjunction with their annual meeting educational activities. Study participants (n=200) will be randomized into control and intervention groups. The intervention group will be instructed to complete the planning worksheet and provided a planning program to facilitate planning of their CPD activities. The control group will be provided with the planning program prior to the meeting but will not have instructions guiding them on using the planning tools. Both groups will complete three electronic surveys; one prior to, one immediately after, and one six weeks after the meeting. Each survey will assess various components of the CPD processes, including reflection, planning, acting, and evaluation of self-directed learning, as well as implementing practice changes and seeking other educational opportunities. Results: Data will be collected in March and April 2010 and analyzed using descriptive statistics and wilcoxon signed rank for paired data. Results will be presented at the meeting. Implications: Implications will be presented at the meeting.

Cultural Awareness and the Community Pharmacist. Anita Young, Northeastern University, Nathanial M. Rickles, Northeastern University, Donney John, Massachusetts College of Pharmacy and Health Sciences-Boston. Objectives: There is a paucity of continuing education (CE) programs on preparing community/ambulatory pharmacists to be sensitive to the needs of culturally diverse patient populations. To optimally develop and target such programs, we aim to: (1) evaluate the nature/extent of community/ambulatory pharmacists’ culturally competent knowledge, beliefs, and behaviors, (2) describe barriers and resources pharmacists encounter in providing culturally competent care, and (3) explore how pharmacist factors relate to culturally competent knowledge, beliefs, and behaviors. Method: We administered an anonymous, online survey involving 7 sections/25 questions to a convenience sample of approximately 3000 pharmacists in Massachusetts. These pharmacists were identified from a list developed from the CE department at one SOP.
Questions were created through collaboration across two Schools of Pharmacy (SOP), a community health center, and two managed care organizations. The survey could be accessed online for 2 weeks. Respondents provided consent to participate. IRB approval was obtained. Results will be collected/analyzed using SPSS 18.0. Data will be described using descriptive statistics. Bivariate correlations will explore relationships between pharmacist factors, culturally sensitive knowledge, beliefs, and behaviors. Multivariate analysis will examine what predictors most significantly relate to pharmacists having culturally sensitive knowledge, beliefs, and engage in culturally competent behaviors. Results: Results are pending since data collection is in progress. We will present a template for a CE program on cultural competency based on findings. Implications: With the growing cultural diversity of the US population, there is great need for more educational programs to help pharmacists become culturally competent.

**Developing a Student E-Portfolio Across the Curriculum.** Michael G. Kendrach, Samford University, Terri M. Wensel, Samford University, Patricia B. Naro, Samford University, Mary R. Monk-Tutor, Samford University, Mary A. Worthington, Samford University, Chris Chapleau, Samford University, Ashley Hashbrouck, Samford University, Rachel Slaton, Samford University. Objectives: Describe the process of designing and implementing an e-portfolio system that extends across the entire professional curriculum. Method: A team of faculty and students worked together to create a student e-portfolio system, including vendor selection, literature review and development of: purpose and goals; portfolio components; assessment rubric; grading policies; new faculty-student mentor system; assessment of the system, and, faculty plus student education. Portfolio components were designed to serve as an ongoing formative assessment of student progress on the school’s ability-based outcomes (ABOs) across the curriculum as well as global learning outcomes (GLOs) that correspond with course objectives in each semester. Results: The e-portfolio was not designed as a ‘grocery cart’ to store student work, but to integrate their learning plus reflect upon their accomplishments and professional growth. A pass/fail e-portfolio system was implemented for P1 students in Fall 2009, with plans to add current P2 and P3 students in fall 2010. Components included: personal and professional goals; CV; reflections on ABOs, GLOs, and experiential, service and research opportunities. Inservices were provided to students and faculty describing the e-portfolio, grading rubric, and mentor system. In May 2010, students and faculty will be asked to assess the success of the e-portfolio system and identify areas for improvement. Implications: An ACPE-compliant e-portfolio system was implemented that allows students to reflect on and assess their own professional progress across the curriculum. Lessons learned regarding the successes and challenges of the e-portfolio will be shared, including tips to help others develop and implement their own system.

**Digital Writing as Final Summative Evaluation Activity for Practicing Pharmacists within an Online CPE Activity.** Nicole M. Kast, University of Minnesota, Amy L. Pittenger, University of Minnesota. Objectives: ACPE CPE Standard 9 requires an assessment allowing participants to demonstrate application of new knowledge. We developed a CPE activity which utilized a hypertext document as the primary summative assessment. An online 15 contact hour (series of 3 activities, 5 contact hours each) CPE activity, Dietary Supplement Series, was developed for pharmacists, which focused on use of dietary supplements as therapy. The primary objective of this project was to evaluate the effectiveness and feasibility of using this application assessment strategy as the primary summative assessment tool. Method: Utilizing confidence-based learning (CBL), we evaluated the ability of a summative application assessment strategy to influence pharmacists’ confidence to provide clinical recommendations regarding dietary supplements. Participants were presented a patient case scenario prior to accessing learning materials, and asked to rate their confidence addressing the clinical issues within the case (validated CBL scale). After completing learning materials, participants created a response to the patient in the scenario within the web-building tool Google Sites, hyper-linking recommendations to medical evidence supporting their statements; participants then completed the CBL post-test. Results: At the time of abstract submission, series 1 and 2 have completed; series 3 will conclude February 22nd. 100% of participants rated the hypertext assessment as very appropriate or appropriate. 83% completion rate for series 1 and 2. Preliminary data suggest that confidence levels among pharmacists improved. Implications: Utilizing digital writing and hypertext documents as a primary summative assessment strategy is an effective and feasible way for pharmacists to demonstrate application of new knowledge.

**Evaluation of Pharmacists Education and Training Needs in Pharmacogenomics.** Kenza E. Benzeroual, Long Island University. Objectives: The present pilot study evaluates practicing pharmacist’s current knowledge in pharmacogenomics (PGx), and interest in PGx education and training. The study will also determine the type of educational programs needed to help PGx integration in clinical practice. Method: A cross-sectional survey was administered to pharmacists during a CE session offered in the metropolitan area. Descriptive statistical analysis was carried out using SPSS software. Results: A total of 144 participants responded to the survey. Our response rate was 72%. 70% have not received adequate education in genetics and molecular biology, and lack confidence in understanding basic concepts. 90.9% did not receive education in PGx at school, and 89.1% couldn’t define common terms used in PGx. Only 3.5% had education/training in PGx after graduation, and most pharmacists were not confident at understanding different PGx topics. 74.6% recognized the importance of PGx-related drug safety issues. Training and educational preferences were reported as follows: CE (41%), textbooks (16.7%), scientific publications (15.3%), on-site training 5.6%, seminars 5.6%, and weekend/evening classes (2.1%). The top three PGx topics that pharmacists want to be trained in include: PGx and diseases (37.5%), PGx and drug metabolism (25.0%), and human genomics (20.8%). 47.1% showed interest in obtaining a PGx certificate. Implications: This study will raise pharmacists’ awareness of PGx and the immediate need for education and training. It will also guide the rationale for developing programs in the format of CEs or certificate in different areas of pharmacogenomics as applied to clinical practice.

**Evaluation of a Pharmacy Management and Leadership Curriculum for Pharmacy Residents and Fellows.** Jacob P. Gettig, Northwestern University Chicago College of Pharmacy. Objectives: Most pharmacy postgraduate training programs focus on developing the clinical skills of future practitioners; however, they may lack opportunities for developing leadership and management skills. Our institution developed the Pharmacy Leadership and Management Curriculum (PMLC), which is a series of educational seminars designed to assist pharmacy residents and fellows gain the knowledge, attitudes, and skills they need to be effective leaders and managers. The objectives of this study are to 1) describe the PMLC and 2) summarize evaluations of the PMLC. Method: The PMLC was first implemented in 2008-2009 as a series of six live seminars. In 2009-2010, three significant changes were made: 1) two seminars were
added 2) all seminars were accredited for continuing pharmacy education and 3) evaluations of each seminar were collected. Select seminar topics include meeting facilitation, justifying clinical services and pharmacy advocacy. Evaluation questions included, but were not limited to achievement of learning objectives, effectiveness of learning assessments, perception of bias and overall rating. Evaluations will be summarized using descriptive statistics. Results: Nine residents participated in the 2009-2010 PMLC. At the time of abstract submission, data were available for six of eight seminars. Mean attendance to the first six seminars was 89%. The weighted mean overall rating for the first six units was 3.41/4.00 (range 2.83 to 3.67). Implications: The PMLC is a unique educational series aimed at developing residents and fellows into future leaders and managers. The final evaluation of the series is forthcoming, but preliminary results demonstrate perceived value of the curriculum.

Faculty Development Program Designed to Improve Skills in Dealing with Issues of Student Professionalism. Richard J. Kasmer, Northeastern Ohio Universities Colleges of Medicine and Pharmacy, Ellen Whiting, Northeastern Ohio Universities Colleges of Medicine and Pharmacy, Mark A. Penn, Northern Ohio Universities Colleges of Medicine and Pharmacy, Susan P. Bruce, Northeastern Ohio Universities Colleges of Medicine and Pharmacy. Objectives: To describe a faculty development program focused on improving the skills of faculty and preceptors dealing with issues of student professionalism. Method: Northeastern Ohio Universities Colleges of Medicine & Pharmacy (NEOUCOP) is creating a series of educational programs focused on improving the knowledge-base and skill set of faculty and preceptors that deal with student professionalism incidents. Several core topics were identified including behaviors of concern, incident recognition, student notification, effective methods of communication, documentation, corrective actions, committee referral, disciplinary actions and policy development. Educational content will be created by a team representing the Office of Faculty Development, Student Affairs, legal counsel, administration, faculty and staff. Several venues such as department meetings, preceptor training events and faculty retreats will be utilized to deliver the material in order to maximize contact and impact. Results: Faculty and preceptors infrequently receive formalized training and development on handling problematic students prior to entering the academic or clinical environments. Effective and immediate action is necessary in order for unacceptable behavior to be corrected. Lack of training can lead to continuing student misbehavior, faculty frustration with inability to remedy the situation and the difficult to reverse perception that unprofessional behavior is tolerated. Implications: This series of programs will serve as a basis to educate faculty and preceptors on methods and techniques that can be utilized in their daily practice. Such training is useful to young professionals transitioning into new roles, provides career enrichment to established faculty and may promote long-term retention within the organization.

Implementing a Continuous Professional Development (CPD) Process for first-semester Pharmacy Students. Nancy DeGuire, University of the Pacific, Sian Carr-Lopez, University of the Pacific. Objectives: To incorporate the first two stages of an ongoing five-stage CPD cycle into the professional portfolio requirements of a first-semester course in pharmacy professionalism. Method: All students enrolled in a first-semester professionalism course were provided instruments to conduct self-appraisal of their cultural awareness, personality tendencies, professionalism and career pathway within pharmacy. Professionalism was assessed using the Professionalism Quick Test and the Pharmacy Student Professional Survey. Personality tendencies were assessed using How Outgoing Are You? The Extraversion Quotient and Discover Your Perfect Career Quiz. Cultural competency was assessed using Quality and Culture Quiz and the Multicultural Awareness Inventory and career path was assessed using the APhA Career Pathway Evaluation Program for Pharmacy Professionals. Following the self-appraisal process, students were asked to develop a personal plan to address areas for improvement. Students were required to include this information in their professional portfolio which historically has included certificates of completion for technical patient care competencies or legal practice requirements. Results: 205 students completed all assessments. The vast majority of students scored as introverts. 8% had outstanding professional behavior, 53% satisfactory, 23% intolerable and 16% counterproductive behaviors. All but a few students developed a plan to address areas for improvement. Similar trends were seen with cultural awareness. Implications: Initiating the process for CPD could begin in pharmacy school. Students should be provided opportunities to self-appraise important skills such as professionalism and cultural competencies in addition to technical or knowledge-based assessments.

Use of Standardized Patients in a Professional Development Course on Menopause. Terri J. Schindel, University of Alberta, Nese Yuksel, University of Alberta, Pam Rock, University of Alberta, Petra Duncan, University of Alberta. Objectives: As the population ages, women are entering the menopause transition in unprecedented numbers. Pharmacists have important roles as providers of care for women that include performing a comprehensive patient assessment. A professional development course incorporating standardized patients (SP) was developed and evaluated. The objective of the evaluation is to explore how pharmacists implemented patient assessment in their practice following the course. Method: As part of a 3-day course to address pharmacists’ roles in the menopause transition, 8 scenarios for SP encounters were developed. Pharmacists participated as the interviewer or observer in four simulated encounters. Small group debriefing sessions with the actor were facilitated by an experienced pharmacist. Patient assessments were digitally recorded and were available for view following the course. The course was evaluated using a mixed methods research design consisting of written surveys immediately before and after the course and semi-structured interviews were conducted 9 - 12 months following the course. Results: Twenty pharmacists completed the course in February 2009. Confidence in patient care skills increased significantly with all aspects of patient care. Overall, pharmacists demonstrated an increase in confidence with respect to asking patients about their medical conditions and discussing changes in medications. To date, 16 pharmacists have consented to be interviewed. While the analysis is still underway, preliminary findings indicate that majority of pharmacists have implemented patient assessment to varying extents in their practice. Implications: Using SP to teach and practice patient assessment skills appears to translate to changes in practice following the CPD course.

EXPERIENTIAL EDUCATION
Completed Research
A Novel Method for Teaching and Assessing Students’ Medication Knowledge, Dispensing, and Counseling Skills. Patricia L. Darbishire, Purdue University. Objectives: To develop a structured teaching method and assessment tools that evaluate students’ medication knowledge, dispensing, and counseling skills in an experiential
course. **Method:** A new community pharmacy course for first year students was developed and piloted in 2009 for full implementation with 160 students in 2010. The course uses a practical, highly structured approach to teach medication knowledge, along with prescription dispensing and patient counseling skills. Newly developed assessment tools are an integral component of the course. **Results:** Instructors, TAs, and 11 students provided feedback on the assessment tools as part of the pilot. The first tool assesses the students’ medication knowledge and filling accuracy, while the second assesses counseling skills and confidence. A third instrument is a voluntary survey evaluating the patient’s pharmacy experience and results in counseling performance scores, as is done in industry. An additional assessment method involves videotaping live counseling sessions for student self-assessment and use in small group discussions. Following evaluation of the pilot results, the assessment tools were reviewed and endorsed by the Purdue Center for Instructional Excellence. **Implications:** The assessment tools enhance student performance and will be used to make improvements in course content and structure. Following two semesters of implementation, analysis of the assessment project will be published. Pharmacy, nursing, or medical schools can apply the assessment tools in a number of settings, including the classroom, recitation, simulated laboratories, introductory experiential rotations, or in internships. It is expected that the course and assessment results will lead to further development of methods used to evaluate patient-related endpoints.

**A Tool to Teach Heart Failure Guidelines and Assess Therapy in a Cardiology Rotation.** Kathleen A. Packard, Creighton University, Thomas L. Lenz, Creighton University, Christopher J. Destache, Creighton University. **Objectives:** The purpose of this study was to determine the effectiveness of the Heart Failure Screening Form in teaching heart failure treatment guidelines and prompting students to evaluate patients’ medications to initiate patient education and provider intervention. **Method:** Between 2002 and 2009, 123 pharmacy students utilized the Heart Failure Screening Form during an elective cardiology rotation in a community hospital to assess heart failure medications. A sub-set of 41 students were also assessed for change in heart failure knowledge and confidence pre- and post-rotation. **Results:** A total of 1,114 heart failure patients were screened and assessed using the tool with a mean age of 71.92 + 12.90 years. Of those, 535 (48%) patients met screening criteria and underwent heart failure education. From 2008-2009, there were 45 heart failure interventions with a 60% provider acceptance rate. There were statistically significant improvements in heart failure knowledge and in all areas of confidence at the end of the rotation in the 41 students assessed. **Implications:** When used on a cardiology rotation, the Heart Failure Screening Form is an effective tool to teach and practice evidence-based medicine and to prompt students to initiate provider intervention and patient education. Its use is also associated with significant increases in knowledge and confidence in heart failure medication therapy management.

**A Structured, Longitudinal Introductory Pharmacy Practice Experience (IPPE) Medicine Rotation.** Winter J. Smith, The University of Oklahoma, Kimi S. Vesta, Matthew L. Bird, The University of Oklahoma. **Objectives:** To increase depth of and student engagement in IPPE activities, add student accountability for IPPE assignments, increase faculty IPPE participation, increase the number of IPPE hours available to students, and meet requirements of the 2007 ACPE standards. **Method:** A structured, longitudinal IPPE medicine rotation for pharmacy students in their P1, P2, and P3 years was designed based on the established APPE medicine rotation. Participation in IPPE activities was based on the learner’s educational level. Learning objectives and instructions were developed for each activity. **Results:** The IPPE medicine rotation allows faculty to provide a significantly greater number of contact hours than the traditional one-time site visit design. Following participation, students report a greater understanding of clinical pharmacists’ roles, an increased confidence in their clinical skills, and better preparation for APPEs. Student evaluations demonstrate that this new design performed as well as other established clinical IPPE sites. Peer evaluators view this approach as innovative, in compliance with ACPE standards, and transferable to other practice sites. **Implications:** This innovative IPPE approach represents an effective and efficient way to provide patient care experiences to IPPE students in accordance with accreditation standards. Since IPPE activities are layered on established APPE activities, this model is transferable to other clinical settings.

**Analysis of Students’ Evaluations of Advanced Pharmacy Practice Experiences by Region, Rotation Type, and Year.** Kenneth A. Lawson, The University of Texas at Austin, Jennifer L. Ridings-Myhra, The University of Texas at Austin. **Objectives:** To determine if students’ evaluations of preceptors, practice sites, and experiences during their seven six-week P4 experiential rotations (Advanced Pharmacy Practice Experiences (APPEs)) differ by geographic region, rotation type, and year. **Method:** At the end of each APPE, students completed a 25-item online evaluation of their preceptor, practice site and overall experience using 5-point Likert responses (with “5” being most favorable). Principal components analysis (PCA) with Varimax rotation was used to establish subscales. Factor-based subscale mean scores were compared by region (6), rotation type (ambulatory, institutional, acute, elective, and selective), and year (2007 through 2009) using one-way ANOVA. **Results:** PCA identified three subscales [(Rotation Outcomes (RO)-10 items, alpha = 0.89; Preceptor Evaluation (PE)-12 items, alpha = 0.96; and Site Evaluation (SE)-3 items, alpha = 0.71]. Subscale means (SD) were: RO [4.18(0.66)]; PE [4.53(0.69)]; SE [4.55(0.62)] (N = 2,626). ANOVA showed significant differences for all three subscales by region and rotation type, and for the RO subscale by year (p<0.01). Post-hoc tests showed that regional differences favored one region; however, the largest difference was only 0.29 units. Acute rotations were generally favored over other types; however, all differences were less than 0.20 units except for one (0.58). Subscale means increased by year but all differences were less than 0.10 units. **Implications:** Students’ evaluations of APPEs were favorable overall and across all regions and rotation types over the past three years. Although some significant differences were identified, these differences are relatively small in a practical sense. Efforts to optimize and standardize APPEs are supported by these results.

**Assessing APPE Student Interest in Twitter as a Means of Experiential Education Office (EEO) Communication.** Robert DiCenzo, St. John Fisher College, Sherry Jimenez, St. John Fisher College. **Objectives:** In an attempt to improve communication to APPE students, the EEO is considering use of a number of innovative means of communication including Twitter; a free social networking and micro-blogging service. The purpose of this survey was to determine APPE student interest in Twitter. **Method:** All APPE students were surveyed in January-February of 2010 using E*Value. Summary statistics were calculated using E*Value course performance reports. **Results:** 52 of 53 APPE students completed the survey. Fifty-eight percent of students are male and 79% have a college degree. The percentage of students below, within and above the ages of 25 -29 years was 21%, 60% and 19%, respectively. Although 90%
of students indicated they check text messaging daily and 77% have allowed their email to become full, most students did not feel that Twitter would be a useful means of EEO communication: 90% preferred email to twitter, 89% felt email was more convenient and 73% felt email was faster. However, some students saw an advantage to using twitter in addition to email: 39% felt the combination may be faster and 33% felt the combination may be more convenient. Lack of interest in Twitter could be influenced by a number of factors including currently owning a wireless phone with email capability (46%) or feeling that the EEO already communicates well (87%).

Implications: The results of this survey imply that only a small percentage of students will use Twitter and those who do will most likely use Twitter to compliment email.

Assessment of P4 Students’ Participation in Medication Therapy Management Services on Community Pharmacy Rotations. Kelli L. Coover, Creighton University, Jennifer A. Tilleman, Creighton University, Kimberley J. Begley, Creighton University, Samuel C. Augustine, Creighton University, Ann M. Ryan-Haddad, Creighton University, Rhonda M. Jones, Creighton University. Objectives: To assess fourth year pharmacy students’ participation in Medication Therapy Management (MTM) services during community pharmacy rotations. To determine if the students believed that MTM training in their third year Early Practice Experience III and Dispensing Courses prepared them to complete MTM cases. Method: All students in the graduating class of 2009 (n = 156) were invited to complete a 38-item online survey. The survey contained quantitative and qualitative questions regarding participation in MTM during community pharmacy rotations. Results: Eighty seven students (56%) completed the survey. Forty seven percent completed a required community pharmacy rotation at a chain pharmacy, 39.1% in an independent pharmacy, and 13.8% at a grocery chain pharmacy. Twenty one percent participated in MTM on their required community pharmacy rotations, 5% on their elective community pharmacy rotations, and 3.4% on advanced community pharmacy rotations. During required community pharmacy rotations, 18% participated in medication therapy review, 13.8% completed documentation and follow-up, 10.3% developed a medication action plan, and 10.3% contacted the preceptor. Approximately 64% did not participate in MTM because their rotation site did not provide MTM services, 10.3% reported no pending cases during their rotations, and 3.4% were not allowed by the preceptor to participate in MTM. Nearly 54% believed the didactic training was a good introduction to community rotations. Implications: Most students (62%) plan to practice in community pharmacy, however, many have not had opportunities to provide MTM services during community pharmacy rotations. Further assessment of community pharmacy preceptors on the provision of MTM services may be warranted.

Building an IPPE Program to Build Skills. Denise A. Soltis, Drake University, Heidi J. Price, Drake University, Anisa Fornoff, Drake University, Sheryl L. Compton, Drake University, Linda L. Krypel, Drake University, Nora L. Stelter, Drake University, Cheryl L. Clarke, Drake University. Objectives: To evaluate a truly integrated introductory pharmacy practice experience (IPPE) program that builds skills from basic, intermediate, and advanced as students progress through the professional program. Method: The Pharmacy Skills and Applications course series (PSA) was developed to move students through Basic, Intermediate, and Advanced levels while integrating lab activities with corresponding IPPEs. The series build skills throughout three professional years in the areas of professionalism, communications, clinical reasoning, bicultural competence, drug information, calculations, distribution systems and process, and systems management. Basic P1 IPPEs include geriatric service learning and dispensing early experience. Intermediate P2 IPPEs include diversity service learning, sterile training, and patient care electives (PCEs). Advanced P3 IPPEs include drug therapy problem solving, continuity of care, and PCEs. PCE options include immunization, anticoagulation, persisus education, patient counseling, and health screenings. Evaluation of the program will be determined by end of the year skills exams and evaluation of IPPE by students. Results: Three years of the curriculum have been implemented. 54.9% of students rate their experiences at Excellent, 37.5% Good, 5.6% Fair, 0.7% Poor, and 1.4% did not rate the experience. Overall, student evaluation numbers for the sites are 4.28 (1-poor, 5-excellent). Pass rate on skills exams have been 99.6% P1, 100% P2, and 99.1 %P3. Implications: All three years of the IPPE program were well received and student IPPE evaluations were high. Students pass rates on skills-based exam were high. This IPPE integrated course structure could serve as an example to guide new programs in IPPE development.

Authentic Learning in a University-based Advanced Pharmacy Practice Educational Experience (APPEE). Judith T. Barr, Northeastern University, Debra A. Copeland, Northeastern University, Michael Gonyeau, Northeastern University, Jennifer Kirwin, Northeastern University, Margarita V. DiVall, Northeastern University, J. Andrew Skirvin, Northeastern University. Objectives: To inventory and categorize authentic learning experiences performed by P4 students on 6-week university-based, elective APPEEs. Method: Faculty with pedagogy and assessment expertise offer six-week, university-based APPEEs for P4 students interested in experiencing the roles and responsibilities of teaching and service functions of clinical and social administrative sciences faculty. Faculty, who during academic years 2007-2010 provided P4 APPEEs in conjunction with therapeu-
University of North Carolina at Chapel Hill, Kevin Biese, University of North Carolina at Chapel Hill, Cherri Hobgood, University of North Carolina at Chapel Hill, Melissa M. Dinkins, University of North Carolina at Chapel Hill, David Hollar, University of North Carolina at Chapel Hill, Julie Golding, University of North Carolina at Chapel Hill. Objectives: Patient care is an inter-professional team effort that requires effective communication and understanding of other disciplines’ roles. However, the majority of the healthcare learners have little interaction among other health professions. Method: We implemented simulations for pharmacy, medical and nursing students. All participants completed a pre-test (12-item knowledge and 14-item attitudes) and reviewed a 50-minute podcast on TeamSTEPPS. Interdisciplinary teams were constructed to include one student from each discipline. The simulation was designed around medication interactions in a decompensating post-operative patient. Each student and the patient’s family had different pieces of information that needed to be shared by working together in order to reach the correct solution. Students were debriefed afterwards followed by a post-test. Outcome measures were changes in pre-post knowledge and attitudes scores and cognitive debrief of faculty on the project. Results: Five complete groups of students with representation from each discipline participated. Analysis of individual performance (N=15) demonstrated significant pre-post improvement in attitudes towards other professions (p=0.05) and knowledge of team behaviors (p=0.009). Debriefs showed several “ah-ha” moments including one medical student stating, “the pharmacy student suggested we speak to the friend three times, and I ignored her because I thought what I was doing for the patient was more pressing, and that’s why we missed it!” Implications: Opportunities for learning side by side with other health professionals is beneficial to learners. Interdisciplinary simulations enhance learner attitudes and knowledge of team-based behaviors. Limitations, such as curricular schedules, highlight the need for senior leadership to achieve widespread implementation.

Community Engagement through a Church-Based Wellness Clinic for IPPE Experiences. Gayle A. Brazeau, University at Buffalo, The State University of New York, Peter M. Brody, University at Buffalo, The State University of New York. Objectives: A monthly wellness clinic for IPPE experiences was developed in conjunction with a local church to promote student pharmacist engagement in their community. This clinic promotes wellness by providing monthly blood pressure (BP) checks, medication counseling, and highlighting various health topics, taking advantage of a large weekly gathering of adults in a community setting. Method: Monthly four-hour community wellness clinics have been conducted at the Pendleton Center United Methodist Church since spring 2006. Clinics are offered every third Sunday morning of each month and are manned by a 4-7 student pharmacists with one pharmacy and nurse practitioner preceptor. BP measurements are recorded in a confidential church wellness database. Individuals with elevated BPs are counseled by the students and their preceptors with follow-up the following week. Each month also focuses on a student-driven wellness initiative (e.g., importance of immunization, use of sun-screens and heartburn awareness). Students and church members have evaluated this program through open ended written comments. Results: Over 100 student pharmacists have been involved in 27 clinics. The database includes over 375 church members with an average of 38 BP per clinic with 47% (Range 2-20) of members repeatedly participating in the clinic. Written evaluations indicate student pharmacists are very positive about the opportunity to interact with church members and the nurse practitioner. Church members indicated the usefulness of the regular interactions with student pharmacists as a way to promote community wellness. Implications: A monthly church-based clinic for IPPE experiences promotes student pharmacists the opportunity to promote community-based wellness.

Comparison of Preferred Incentives, Motivation and Satisfaction of Community and Institutional APPE Preceptors in Arkansas. Schwanda K. Flowers, University of Arkansas for Medical Sciences, Kathryn K. Neill, University of Arkansas for Medical Sciences, Daniel C. Spadaro, University of Arkansas for Medical Sciences. Objectives: Increased emphasis on experiential education in the ACPE standards, new Colleges of Pharmacy, and expanding class sizes has increased demand for APPEs. To motivate preceptors to participate in student education, Colleges must investigate preceptor satisfaction and needs. Objectives of this study are to determine preferred incentives, underlying motivations and overall satisfaction of preceptors and compare these data based on practice site. Method: 423 preceptors were emailed a link to an 18 question on-line survey (Survey Monkey). Collected data for Community and Institutional (hospital, home-infusion, and long-term care) preceptors were analyzed using descriptive statistics. Results: 152 preceptors completed the survey and 42 emails returned undeliverable resulting in a response rate of 39.9%. Community (47.7%) and hospital (39.1%) preceptors represented the majority of respondents. Other sites represented include home infusion, nuclear, managed care, long-term care, compounding, and regulatory practice. Incentives preferred by Community preceptors were College-sponsored continuing education (69.5%) and provision of reference materials (62.5%). Institutional preceptors preferred support for professional development (81%) and University library access (74.2%). Preceptors placed less value on appreciation events and payment per student with 32.1% and 41.8% of preceptors rating these “Not Important”, respectively. The study does suggest several areas for experiential improvement, particularly with regard to the grading rubric. Implications: Overall 91.6% of these preceptors have a high level of satisfaction with the College (Agree/Strongly Agree). Based on these data, it is likely that incentives used to recruit new preceptors and develop sites will differ based on the preceptor’s area of practice.

Comparison of Residency and Non-residency Trained APPE Community Preceptors on Recent Graduate Attitude and Behaviors. Brian Roland, Wilkes University, Edward F. Foote, Wilkes University, Michelle Holt-Macey, Wilkes University, Marie Rokethomas, Wilkes University. Objectives: At Wilkes, we have focused on the development of APPE community preceptors such that in 2008-2009 43% of our required community APPE rotations were taught by residency-trained preceptors (RTPs). The objective of this research was to identify differences between graduates who completed their community APPE under RTPs and those who did not. Method: Using an 18-item anonymous questionnaire (SurveyMonkey.com), we surveyed the class of 2009 (n=62) regarding: APPE activities, evaluation of the rotation, attitudes on the profession, and current job activities. Survey questions were Likert-based with 1 being “strongly agree” and 5 being “strongly disagree.” This project was approved by our IRB. Results: 80% of the class responded to the questionnaire; of these 47% were trained by an RTP. During their APPE rotation, students with an RTP were more likely to counsel, provide patient care and answer drug information questions (all p values were <0.05). The RTP graduates were more likely to agree that the rotation was a beneficial experience (1.87 vs. 2.55, p <0.05) and that their preceptor was a positive role model (1.13 vs. 1.65,
p<0.05) and active in patient care (1.30 vs. 2.31, p<0.05). Three graduates in the RTP-group indicated the community APPE altered their postgraduate career choice versus none in the non-RTP-group (p=0.057). **Implications:** Our data suggest that community APPEs taught by RTPs engaged students in more patient-centered activities and resulted in higher levels of satisfaction. There was a trend toward altering career choices in the RTP-group. Schools should work to provide RTPs for all APPE community rotations.

**Cost Savings of Clinical Interventions Made by PharmD Students at a Community Teaching Hospital.** Pamela M. Moye, Mercer University, Lisa M. Lundquist, Mercer University, Phillip S. Owen, Mercer University. **Objectives:** To determine cost savings by pharmacy students’ clinical interventions at a community teaching hospital. **Method:** Clinical interventions of fourth year pharmacy students completing advanced pharmacy practice experiences (APPE) in ambulatory care, internal medicine, and critical care at a community teaching hospital were compiled. All intervention data from May 2008 - October 2008 were recorded on a data collection form and were classified by intervention type. Intervention types included: allergy clarification, order clarification, medication initiation/discontinuation, dose evaluation, laboratory evaluation, antibiotic recommendation, and IV to PO. The data were entered into Quantifi®, a computer software program to record clinical intervention data. A dollar value was associated with each intervention to record a total of estimated cost impact. **Results:** A total of 449 clinical interventions were attempted; 371 (79%) were accepted. Overall, cost savings for the accepted intervention for the 6-month period was $57,955 ($34,272 ambulatory care, $14,794 internal medicine, $8,889 critical care). The major types of attempted clinical interventions with corresponding cost savings and acceptance rates (AR) include: medication initiation/discontinuation (n=153, $18,207; AR = 78%) laboratory evaluation (n=110, $14,382; AR = 85%), clarification of orders (n=63, $9,639; AR=100%), dose evaluation (n=80, $9,639; AR = 79%), and antibiotic recommendations (n=33, $5,136; AR = 73%). **Implications:** Pharmacy students on faculty-precepted APPE have the potential to impact cost savings for a health system through clinical interventions in ambulatory care, internal medicine, and critical care. The type of interventions with the highest acceptance rates and cost savings opportunities were laboratory evaluation, clarification of orders, dose evaluation, and medication initiation/discontinuation.

**Experiential Education Curricular Mapping: Advanced Pharmacy Practice Experiences.** Jeffrey T. Copeland, University of the Incarnate Word, Jason Cota, University of the Incarnate Word. **Objectives:** To map the School of Pharmacy’s outcomes to the Texas State Board of Pharmacy’s (TSBP) Competencies for the advanced pharmacy practice experiences. **Method:** Outcomes from the School of Pharmacy’s Student Outcomes Document were selected by a pharmacy practice committee and reviewed by the Office of Experiential Programs. The mapping occurred for the four required ACPE rotations (Community, Hospital/Health System, Ambulatory, Acute Care / General Medicine) and three elective rotations. The final mapping underwent Curriculum Committee review. The experience plans were approved by the formal TSBP annual review. **Results:** A curriculum map of the outcomes to the competencies and requirements of three different organizations was produced. Opportunity for meeting all TSBP Competencies by all students is contained in the required rotations. Elective rotations offer additional opportunities for meeting the TSBP Competencies. **Implications:** The curriculum map allows an evaluator to identify the specific course of outcome and competency assessment. This document allows continuous review of the experiences.

**First Year Student Pilot Meetings: Taking the Time to Build Relationships in a Large Class.** Erin Johanson, Midwestern University College of Pharmacy-Glendale. **Objectives:** The Coordinator and Assistant Director in the Office of Experiential Education at Midwestern University, College of Pharmacy-Glendale speculated that taking the time to get to know students in their first year would have an impact on their relationships and perhaps even academic performance on rotations. **Method:** The two representatives from OEE met with students from the class of 2012 during summer and fall of 2009 in two hour blocks for either breakfast or lunch. In order to facilitate open discussion, twelve meetings were held using CPG’s faculty advisor group assignments. Twelve students were invited to each meeting along with their faculty advisor. Twenty four hours in total were spent meeting with students. **Results:** Student feedback forms were collected from 99 students. Overall results indicated that students found the meeting beneficial to them, would recommend OEE meet with all PS-1 students in their advisor groups in the first year, felt that sharing their work experience and goals with OEE will help to better place them on rotations they will find satisfying, helped to build rapport between the students and OEE, and made them more likely to speak to OEE if they have a concern while on rotation. **Implications:** While this initial pilot was a great success, it will be important to follow-up with students and OEE staff to ensure that the relationships they initiated are maintained throughout the students schooling. Additional meetings with both this class and future classes would likely be beneficial to assessing the effectiveness of such meetings.

**Impact of Pharmacy Students on Advanced Pharmacy Practice Experiences at a Community Non-teaching Hospital.** Angela O. Shogbon, Mercer University, Lisa M. Lundquist, Mercer University. **Objectives:** To assess the impact of pharmacy students on advanced pharmacy practice experiences (APPE) at a community non-teaching hospital by evaluation of clinical interventions for cost savings, intervention class, and acceptance rate. **Method:** Clinical interventions of 18 fourth-year pharmacy students on Medication Safety (n=5), Advanced Institutional (n=5) and Internal Medicine (n=8) APPE were collected from June 2009 to December 2009. Students documented their daily clinical interventions on a data collection form. The clinical interventions were therapeutic (antibiotic recommendations, medication initiation/discontinuation), safety (dose evaluation, drug interactions), quality assurance (medication history, duplicate avoidance), lab evaluation, IV to PO, and information/education. The data were entered into a pharmacy intervention database for analysis of total cost savings, intervention class, and acceptance rates. **Results:** A total of 318 clinical interventions were attempted (76 medication safety, 54 advanced institutional, 188 internal medicine). The total cost savings was $33,955. The types of interventions included: therapeutic (n=37, 11.6%), safety (n=16, 5%), quality assurance (n=27, 8.5%), lab evaluation (n=15, 4.7%), IV to PO (n=93, 29.2%), and information/education (n=130, 40.9%). Internal medicine APPE students contributed to most of the therapeutic (91.9%), safety (93.8%), quality assurance (92.6%) and lab evaluation (93.3%) interventions. Acceptance rate for all interventions was 96%. **Implications:** Pharmacy students on APPE at a community non-teaching hospital have multiple opportunities to participate in clinical activities, interact with other healthcare professionals, and significantly impact the care of patients through clinical interventions, while also contributing to pharmacy cost savings.
Impact of a Bootcamp to Prepare first-year Student Pharmacists for IPPE Experiences. Andrea L. Duchac, University of Wisconsin-Madison, Beth A. Martin, University of Wisconsin-Madison, Robert M. Breslow, University of Wisconsin - Madison, Denise L. Walbrandt Pigarelli, University of Wisconsin - Madison, Mara A. Kieser, University of Wisconsin - Madison, Alan Lukaszewski, Oakwood Village, Stephanie Ehle, Oakwood Village West. Objectives: To evaluate the impact of activities held during a full-day bootcamp for first-year students during an IPPE course. Method: A mandatory 8 hour bootcamp was held during orientation week of the fall semester. The day began with an IPPE course overview and a large group discussion about older adults. Five workshops prepared students for various IPPE activities. Workshops addressed blood glucose monitoring, blood pressure (BP) monitoring, an introduction to community outreach projects (COPs), medication and health history taking, and older adult exercise training. Throughout the fall semester, students partnered with an older adult, measured his/her BP on at least 3 occasions, and were encouraged to support the older adult’s exercise activities. Students also participated in COPs activities. The older adults were surveyed regarding students’ capabilities to perform medication histories and BP measurements at the end of the fall semester. Students’ choice of COPs activities and exercise with the older adult were collected. Results: A total of 139 students were enrolled in the course. Students completed 83.1% of their COPs activities with organizations represented at the bootcamp. Exercise was purposefully incorporated at least once into the older adult visits by 97.8% of students. The older adults commented that students were very capable in taking medication histories, but needed improvement in BP technique. Implications: The bootcamp proved beneficial for exposing students to COPs activities and essential monitoring skills. Blood pressure training needs enhancement and longitudinal assessment. The bootcamp will continue to be a required component of the first-year student pharmacist orientation and IPPE course.

Incorporating Novel Instruction and Testing Methods for Aseptic Technique Skills in an Existing IPPE. Valerie L. Ruehter, University of Missouri - Kansas City, Cyndey E. McQueen, University of Missouri-Kansas City. Objectives: Describe necessity to design and incorporate additional skill development for aseptic technique into an existing IPPE. Review instruction methods utilized in the unique delivery of this topic. Discuss results of live testing, pre- and post-tests, and pre- and post-surveys to reveal outcomes of changes in knowledge, skills, and confidence. Method: Through curricular assessment, UMKC identified an area of need for students graduating in 2010. UMKC developed a unique method for delivering aseptic technique content in an existing IPPE course to help prepare students for APPE experiences. Online and live instruction methods were created to introduce information and skills. Students were administered pre- and post-tests to assess knowledge gained by video instruction. All students were required to attend a live demonstration and practice session prior to scheduling a test date to demonstrate proper completion of an aseptic compound. For live instruction methods, students completed a pre- and post-module survey to determine confidence in their ability to perform skills necessary to demonstrate proper aseptic technique. Results: A description of on-line and live instruction methods will be provided. Results from pre- and post-module tests and surveys will be compared to reveal improvement in student knowledge and confidence in performing aseptic technique skills. Implications: UMKC successfully fulfilled an identified curricular need by implementing a unique instruction and testing method within an existing IPPE course by utilizing technology and live instruction. Students displayed an increase in knowledge and confidence in a skill they will be expected to apply during their APPE year.

Introductory Practice Experiences Focusing on Safe Medication Use Practices in Community and Health-System Settings. Pat S. Rafferty, St. Louis College of Pharmacy, Tricia M. Berry, St. Louis College of Pharmacy, Gloria Grice, St. Louis College of Pharmacy, Amy M. Tienieer, St. Louis College of Pharmacy. Objectives: To meet new ACPE standards regarding introductory pharmacy practice experiences (IPPEs), we redesigned our IPPEs. We developed two, 3-week rotations (120 hours community in P2 year; 120 hours health system in P3 year) focusing on safe medication use practices. Method: During the IPPE program design process, program themes were identified and mapped throughout the IPPEs. Program themes included in these IPPEs were healthcare system, communication and collaboration, drug information/medical informatics, and professional values. A literature search was done to gather information on safe medication use practices and others’ experiences with incorporating them in pharmacy curriculum. Elements of previous community and health system based IPPEs were incorporated; however, many new assignments were derived from Joint Commission, USP, FDA, and ISMP resources. On-line lectures provided background content on safe medication use topics including causes, costs, and prevention of medication errors, medication error reporting systems, Just Culture, technology to prevent medication errors, and USP Chapter 797. Results: During two academic years, 388 and 193 students completed community and health system rotations, respectively. IPPE placements were geographically diverse with 150 new rotation sites established over two years. Course outcomes, IPPE themes, safe medication use assignments/activities and assessment tools will be presented. Self- and preceptor-evaluations of student performance indicate that course outcomes were achieved; other indicators of student performance are being analyzed and will be presented. Implications: Students will enter APPEs with significant pharmacy experience and exposure to safe medication use practices. The community and health-system APPEs have been revised to build upon these IPPEs.

Longitudinal Early Practice Experience (LEPE-IPPE): Impact on Students and Community Partners. Nancy A. Mason, University of Michigan, Caroline A. Gaither, University of Michigan, Judy Na, University of Michigan, Melinda Tran, University of Michigan. Objectives: To assess students’ and community partners’ perceptions associated with a longitudinal experience (LEPE-IPPE) in which 2-4 students are assigned to an older adult partner for a series of directed interviews over a 2-year period (P1 and P2 years) on topics related to course material. Method: Students entering their P3 and P4 years completed an on-line survey tool regarding the influence of the LEPE-IPPE on communication abilities, application of pharmaceutical care skills and attitudes toward community service. Community partners were surveyed by mail or telephone regarding perceptions of the LEPE, their pharmacy students, and whether they gained knowledge of the pharmacy profession. Measures were developed based on the literature and consisted of Likert-type scales with 5-point response formats. Data analyses included descriptive statistics and Pearson’s correlations coefficients. Results: Responses were received from 61.2% of community partners (30/49) and 70.3% of students (104/148). Approximately, 83.3% of the partners were female with 29 (96.7%) > age 65 and 19 (63.3%) > age 80. Sixty-eight students (65.4%) were female and 50% from each class. Partners’ perceptions were correlated with evaluations of students (r=0.41, p<0.05) and knowledge gained about the pharmacy profession.
Student evaluations of the program were correlated with their communication abilities \((r=0.55, p<0.0001)\) and attitudes toward community service \((r=0.61, p<0.0001)\). Differences were found by class year. **Implications:** Colleges of pharmacy need creative IPPE programs in which student skills can be developed. Partnering with senior community members has positive benefits for students’ learning and community partners in terms of their understanding of pharmacists’ professional abilities.

**Observation Experiences Improve Pre-Pharmacy Student Understanding of Pharmaceutical Care.** Traci M. White, The University of New Mexico, Amy Buesing, The University of New Mexico. **Objectives:** The primary goal of the University of New Mexico/New Mexico State University (UNM/NMSU) Cooperative Pharmacy Program is to increase the number of practicing pharmacists in southern New Mexico. Graduating seniors from southern New Mexico high schools who are admitted to the program are granted conditional acceptance to the UNM College of Pharmacy after successful completion of pre-pharmacy courses at NMSU. As undergraduates, students participate in various pharmacy practice observation experiences intended to introduce the concept of pharmaceutical care, demonstrate job skills necessary for the pharmacy workplace, and enhance the relevance of current studies in preparation for the Doctor of Pharmacy program at UNM. **Method:** NMSU freshman and sophomore students spent three hours of guided observation in various practice settings including retail, institutional, and ambulatory pharmacy sites. Two pharmaceutical care surveys, each specific to community or institutional pharmacy, were administered before and after the selected rotation. **Results:** Fourteen students completed the community \((n=14)\) and institutional \((n=8)\) pharmacy observations surveys. Using a Likert scale from 1 (strongly disagree) to 5 (strongly agree), students most notably indicated increased awareness of the laws and regulations of pharmacy practice and increased understanding of the role of automation during the drug delivery process. **Implications:** Introducing undergraduate pre-pharmacy students to various pharmacy practice sites and career opportunities through observational experiences prior to entering professional school increases their understanding of the concept and importance of pharmaceutical care while gaining appreciation for the role of the pharmacist in each setting.

**Pharmacist Evaluation of First-year Student Pharmacists’ Professionalism: A Pilot Survey.** Beth A. Martin, University of Wisconsin-Madison, Andrea L. Duchac, University of Wisconsin-Madison, Joshua P. Vanderloo, University of Wisconsin-Madison, Laura R. Koop, The Ohio State University. **Objectives:** To collect standardized feedback from pharmacists on student behaviors during pharmacist role observations (PROs) and to evaluate course objective attainment related to displaying professional attitudes, habits, and values. **Method:** During a semester, students complete three PROs visits, each four hours in length, at the same pharmacy, and with the same pharmacist. The survey was designed so that pharmacists could provide feedback to each student and facilitate discussion about their performance during PROs visits. Eleven professional constructs were identified: communications, scheduling, reliability, appearance, enthusiasm, time management, compliance, feedback, respect, accountability, and relationships with others. An 11-point scale (0 to 10, where 0 is unacceptable and 10 is exemplary) was provided for each of the 13 survey items. Each item contained corresponding rubrics to anchor low, moderate, and high scale values. During the third PROs visit, pharmacists completed the survey and provided written comments regarding areas where students performed well and an area for improvement. **Results:** The 136 surveys collected represented a 97.8% response rate. Means ranged from 9.49 to 9.83 with ‘reliability’ (9.83 +0.41) and ‘respect’ (9.80 +0.54) receiving the highest scores. ‘Appearance’ had the broadest range of scores (4-10) and a mean of 9.60+0.96. ‘Time management’ had the lowest mean score (9.49+0.79). Areas for improvement identified most frequently were asking questions and taking initiative. **Implications:** Overall, students displayed professional attributes during PROs visits. The pharmacists’ use of the pilot survey showed little variation between constructs. Additional pharmacist training on survey use may lessen the potential for social desirability bias.

**Pharmacy Students Establishing and Facilitating a Diabetes Self-management Education Class.** Amy N. Thompson, South Carolina College of Pharmacy-MUSC Campus. **Objectives:** The purpose of this study was three-fold: (1) Establish a DSME class at a student-run free clinic facilitated by pharmacy students; (2) Determine the effect the DSME class has on patient clinical outcomes (A1C, BP, and lipid panel) and on diabetes self-care behavior (3) Determine the effect facilitating a DSME class has on pharmacy students’ level of confidence and mastery of providing diabetes education. **Method:** This study was approved by the IRB. Patients were recruited from the CARES clinic, an interprofessional student-run free clinic. These classes were held in the evenings for 3- hours and offered 5 times a year. The U.S. Diabetes Conversation Maps® were used to provide patients with a process by which they can plan changes in their decision making and behavior. The use of the Conversation Maps and having the students facilitate the class follows the ACPE standard 11, providing a unique method for teaching. Data collected from the third year pharmacy students were anonymous pre-/post-assessment of their confidence level in understanding diabetes management and teaching DSME. **Results:** Improvements in clinical outcomes such as A1C and BP were seen consistently with patients enrolled in the DSME classes. However, no improvement in cholesterol levels was seen. A total of 14 students have participated in the class and overall confidence with teaching diabetes was improved. **Implications:** Through this effort, a successful DSME class has been established in the clinic. This class has improved overall patient care and student confidence with regards to diabetes.

**Preceptor Perspectives on Student Preparedness for Final IPPE Rotations.** Carolyn SJ Ma, University of Hawaii at Hilo, Karen L. Pellegrin, University of Hawaii at Hilo, Lara Gomez, University of Hawaii at Hilo. **Objectives:** Assess the preceptor’s evaluation of the preparation of the PY3 IPPE student. Assess the satisfaction of site preceptors with the overall quality of our pharmacy student. **Method:** CoP Faculty precept PY2 students in one semester each in the community health clinics and long term care facilities. This IPPE rotation emphasizes early development of clinical skills in patient interview, data gathering from charts and SOAP case presentation. Faculty invest tremendous resources to develop these skills. Final IPPE rotation (PY2/3) is held in an acute care medicine setting with nonfaculty site preceptors in the summer before the PY3. After this rotation, site receptors were given a survey to investigate how well our students are prepared for outside rotations. **Results:** Preceptors score our students an average of 3.38 (5 areas clinical skills) and 4.19 for professionalism (scale 1-5 excellent). Preceptors rated our PY2/3 students from 1.7 - 2.20 (1- worse than, 2 - same, 3 - better) when compared to 61 other previously precepted PY4 students. Preceptors rated our students overall readiness for this experiential rotation as 3.44/5 and overall readiness as 3.69/5. Preceptors scored an average of 3.34 (scale 1-4 highly recommend) on whether they would recommend being a preceptor to our students to other pharmacists. **Implications:** Site
Preceptors rate our PY2/3 student as being properly prepared for outside experiential rotations. Student’s high performance may lead to successful APPE rotations and contribute to the retention and recruitment of sites and preceptors.

Preceptor Training Webinar Programs - using GoToWebinar to Reach Preceptors Nationwide. Erin Johanson, Midwestern University College of Pharmacy-Glendale. Objectives: The Office of Experiential Education (OEE) wanted to create increased opportunity to reach preceptors and provide them with live training opportunities. Since 480 of the college’s 713 preceptors are out of state, we wanted to find a way to provide them with opportunities for learning that were not limited to in-person trainings. An interactive online webinar format seemed the best option since it would allow for varied times, dates, and customizable content hosted by OEE. Method: The Assistant Director was authorized purchase for a GoToWebinar account and began creating preceptor trainings to reach a greater number of preceptors nationwide. Four trainings were conducted in 2009: 1) Getting Started (pre-APPE rotation orientation) webinar September 24; 2) Millennial students: Teaching a New Generation of Future Pharmacists webinar October 21; 3) Communication 101 - Providing Feedback Informally and Formally webinar November 17; 4) Professionalism webinar December 14. All of the preceptor training webinars were recorded (audio and video) for future dissemination and training purposes. Results: A total of 88 preceptors participated in the four webinars. GoToWebinar Registration, Attendee, and Performance reports were collected for all of the trainings. Question polls were implemented in all of the trainings with a majority of respondents participating, indicating attentiveness, and showing interest. Implications: OEE will continue to offer both live in-person, online, and recorded preceptor training programs to preceptors. Further studies will be useful in determining preceptor preference in terms of format and interest in various training program topics.

Professional Development for the Millennial Generation. B. DeeAnn Dugan, Samford University, Day Scott, Palm Beach Atlantic University, Jeffrey A. Kyle, Samford University. Objectives: To assess the impact of a redesigned first professional year course on millennial generation student perception of their professional development. Method: Student perceptions were assessed by three methods: 1) course evaluations for 2006 and 2007, 2) professionalism self-assessment surveys administered at orientation, the end of the course, and the conclusion of the third year, and 3) reflective self-assessments collected at the beginning and ending of the first year course and the end of the third year. Course evaluation scores and survey data were evaluated using t-tests. Reflective self-assessments were evaluated using paired t-tests. Descriptive statistics are reported on other data. Results: Compared to students in the 2006 version of the course, students in the 2007 course rated the course higher on all items in the course evaluation (p<0.005). In addition, while none of the items in the professionalism survey showed any statistically significant differences between orientation and the end of the third professional year for 2006 students, 2007 students demonstrated a decline in ratings on four survey items indicating students were more self-aware and critical of their level of professionalism after the first year course. Statistically significant changes in 2007 students’ assessments continued through the third professional year on ten items (p values < 0.05). Finally, the student self-assessments indicated statistically significant improvements in assessed professional growth at both the end of the course and the third year. Implications: This study provides novel information for the design and effective teaching of pharmacy student professionalism for students of the millennial generation.

Receiving Direct Feedback from an OSCE: Does the Method Matter? Donald J. Woodyard, University of North Carolina at Chapel Hill, Kelly Scolaro, University of North Carolina at Chapel Hill, Melissa M. Dinkins, University of North Carolina at Chapel Hill, Erica Clarkson, University of North Carolina at Chapel Hill, Matthew Turner, University of North Carolina at Chapel Hill. Objectives: As part of the pharmaceutical care lab (PCL) course, pharmacy students receive feedback from standardized patients (SP) a total of sixteen times during the first three years of pharmacy school. We examined if the method for providing feedback makes a difference to students. Method: Pharmacy students are provided formative feedback as part of their Observed Structured Clinical Examinations (OSCE) during the second and third year. SPs were trained to provide feedback to students using one of three methods: verbally to the student, verbally to the video camera, or written on the checklist. Each encounter was seven minutes followed by four minutes for feedback, either directly to the student, or using one of the capture methods previously mentioned. Following each OSCE, students completed an online survey about the experience and the quality of the feedback received. Results: 111 second year and 105 third year students (N=216) took the OSCEs and completed the survey. All students were provided with a score report and the ability to access their videos. Only 21% of students receiving direct verbal feedback chose to view their video, however, 92% indicated the direct verbal feedback was helpful. 73% of students who received video feedback viewed their video and 80% reported it as useful. 96% of third year students receiving written comments reported it as useful. Implications: Students overwhelmingly appreciate feedback from OSCEs. Significant cost is required to prepare patients to provide direct feedback, which may not be necessary. Coupled with access to their videos, written feedback may be sufficient.

Roundtables as a Needs Assessment Tool for Future Preceptor Program Development. Raquel Rodriguez, University of Minnesota. Objectives: Roundtables are an effective way of sharing information and ideas. The main objective was to gain information using this format, to assess the needs of the participants with regard to their preceptor development. Method: For the first time, roundtables were used as part of the format of the Annual Preceptor Symposium at the College. Seven topics were selected based on the Experiential Education Curriculum direction and programmatic component: IPPEs, Portfolios, Core Partners, Preparing and Motivating Students for Success, Student Feedback/Grading, Health System Rotation Development, and Managing Requests for Professional and Non-professional Time Away. The roundtable discussions were led by members of the Committee on Experiential Practice. Participants were instructed to participate in four roundtable sessions of 20 minutes each. The discussions were summarized by the leaders at the end of the sessions. Results: Eighty-seven preceptors from the Twin Cities representing a variety of practice settings participated in the program. Feedback from participants revealed that 93% found the roundtables effective. The roundtable format facilitated the understanding of information and processes, allowed participants to ask questions and express their concerns and ideas about the program, and allowed participants to hear about and react to the experiences of other practitioners. The preceptors showed great interest in all of the topics, with the portfolio and grading topics generating the most discussion. Implications: Roundtables overall enhanced the preceptor program and provided the experiential program an opportunity to assess preceptors’ needs through discussion and reflection, leading to a better plan for future educational programs.
SOAP Note Scoring Rubric was Developed and Implemented. Ann M. Snyder, University of Florida, Thomas O. Munyer, University of Florida. Objectives: Develop a rubric to guide learners and improve faculty consistency in assessing student-written progress notes. Method: 1. A rubric for grading progress notes was developed by the primary author and then face validity was established by having 3 faculty members review it for usefulness and completeness. 2. 40 affiliate faculty members were then encouraged to use the rubric during a course requiring students to write a progress note. 3. A faculty workshop was then held where 25 participants scored a SOAP note and the group discussed the assigned ratings. The scores were analyzed to assess rubric sensitivity. 4. During the workshop, a post survey was administered to assess utility of the rubric when assessing students.

Results: 1. The SOAP notes scored prior to the lecture discussion at the workshop revealed 22 of the 25 faculty members indicated they would require the student to rewrite the SOAP note. However, 14 of the 22 rewrites had passing rubric scores. 2. Survey respondents agreed the rubric provided good direction and guidance about the qualities of a well written note. However, 14 of 25 respondents indicated the initial rubric was too complicated and too detailed for grading efficiently. 3. A revised rubric was developed based on their input. Implications: There is significant variation among a practice faculty when assessing a SOAP note. A rubric can facilitate better understanding among faculty about the qualities of a well written note. A workshop can lead to development of a rubric that is more practical for grading.

Student Attitudes towards Interprofessional Education in a Primary Care Clinic. Jeany K. Jun, Western University of Health Sciences, Zuhra Musherraf, Western University of Health Sciences. Objectives: To assess medical, physician assistant, and pharmacy students’ attitudes towards interprofessional education (IPE) in clinical care. Method: Students in the Doctor of Osteopathy (DO), Physician Assistant (PA), and Pharmacy (PharmD) programs on rotation at a primary care clinic were asked to complete the Pre- and Post-Interprofessional Attitudes Questionnaires (IAQ) at the start and end of their four- or six-week rotations. The IAQ is a 10-item questionnaire with a 5-point likert scale. Results: 127 students completed the pre-test. DO students made up 67% of the students with an average age of 26.8 years. The post-test was completed by 67 students. Mean±SD of the pre-test was 4.54±0.55 (5-strongly agree) and the post-test was 4.72±0.10, (P=0.0007). Seven statements showed a statistically significant improvement in scores. Lowest scoring item on the pre-test was the statement “I feel competent in sharing the knowledge of my discipline with other health care professionals” (4.24±0.62) but showed the most significant improvement in the post-test (4.66 ± 0.54, P=0.000001). The statement “I feel patients will appreciate this interprofessional approach to their health care” had no change from the pre- to post-test and was the lowest scoring item on the post-test (4.49 ± 0.70). Highest scores on both tests were “IPE promoted improved patient care and collegiality amongst healthcare professionals” (4.79±0.41). Implications: There was strong agreement that IPE promoted improved working relationships in clinical teams and promoted collegiality amongst healthcare professionals. Patient perception of IPE needs to be further examined.

Student Interest in Service Learning at the UNC Eshelman School of Pharmacy. Allison Billock Rienteau, University of North Carolina at Chapel Hill, Mollie A. Scott, Mountain Area Family Health Center, Adam M. Persky, University of North Carolina at Chapel Hill. Objectives: Service-learning (SL) promotes community involvement and aids students’ professional development. Some Area Health Education Centers associated with UNC Eshelman School of Pharmacy require SL during the PY4 students. There is interest in expanding these opportunities throughout the pharmacy curriculum. This study’s primary outcome was to assess the current involvement of students in SL and gauge interest in an SL course or elective.

Method: This prospective survey polled pharmacy students in the fall semester of 2009. Data collected included demographics, career plans, SL involvement, student attitudes towards service, and student attitudes toward the profession’s involvement in the community. IRB approval was obtained. Results: Two hundred and ninety one students responded to the survey (52% response). Demographics included: 27% PY1, 22% PY2, 22% PY3, 28% PY4 and the mean age was 24. Forty-six percent of students had participated in service-learning activities, 47.7% agreed that SL should be a required element of the pharmacy curriculum, 91.6% agree that SL should be offered as part of an elective course, and 87.7% were interested in participating in SL as part of a course. In an open-ended response, the majority expressed that service-learning was essential to their professional development. Implications: The results indicated an overwhelming student desire for participation in SL activities as part of the pharmacy curriculum. Further analysis will be conducted to determine student characteristics that predict interest in service-learning. Research results will be used to guide curricular change at the UNC Eshelman School of Pharmacy.

Survey of Pharmacy Students’ Attitudes/Perceptions of Patients: 2-Year Results. Cynthia A. Sanoski, Thomas Jefferson University, Elena M. Umland, Thomas Jefferson University, Gerald E. Meyer, Thomas Jefferson University, Andrea S. Joseph, Thomas Jefferson University, Kevin J. Lyons, Thomas Jefferson University, Carolyn Giordano, Thomas Jefferson University. Objectives: Pharmacy students are expected to practice in settings with diverse populations. This study assesses the impact of first-year (P1) Introductory Pharmacy Practice Experiences (IPPEs) on students’ attitudes and perceptions of patients from various backgrounds. Method: P1 students participate in healthcare-related service learning and community pharmacy IPPEs (IPPE1 and IPPE2, respectively). A survey, based on published tools, was used to evaluate students’ attitudes toward: other cultures, the elderly, the poor, disabled individuals, and gay/lesbian/transgendered individuals. Attitudes towards community service and social support were also measured. High mean scores indicate positive attitudes (score range:1-5). The survey was administered prior to students starting each IPPE in the Fall semester and repeated at the end of the semester. Results: Two classes of students were studied (n=127). At baseline, mean scores ranged from 3.75 (importance of social support) to 4.64 (disabled individuals). After completion of the semester, there were no significant differences in attitudes toward other cultures, the poor, community service, or interdisciplinary teams compared to baseline. Mean scores significantly decreased in attitudes toward the elderly, disabled individuals, and gay/lesbian/transgendered (p<0.05). Implications: P1 students began the program with positive attitudes. The decline in attitudes toward the elderly, disabled, and gay/lesbian/transgendered may be attributed to the actual student exposure to patient populations with whom they may have had limited prior experience. The survey will be administered at the end of the P1 Spring semester and the end of the P2 and P3 years to evaluate whether additional experiences in various pharmacy settings will further impact their attitudes.

The Role of Student Self-Assessment and Previous Work Experience in Introductory Pharmacy Practice Experiences (IPPEs). Susan H. Staggs, The University of Iowa, Jennifer L. Seyfer, The University of Iowa, Bernard A. Sorofman, The University of Iowa,
Jay D. Currie, The University of Iowa, Lisa R. DuBrava, The University of Iowa, Sandra J. Johnson, The University of Iowa. **Objectives:** Students are asked to assess their knowledge, skills, and values throughout experiential learning to establish a culture of reflective, life-long learning. This paper will 1) compare students’ initial self-assessment with prior pharmacy-related work experience, and 2) describe a method of using student self-assessment in a community and hospital pharmacy IPPE. **Method:** Use of student self-assessments in community and hospital pharmacy IPPEs will be described. Data from students’ initial self-assessment prior to the required hospital or community IPPE will be described. The students rate their ability to perform on 20 outcomes using a 1-5 rating scale, (1 being “unacceptable performance” and 5 “extraordinary performance”). Outcomes are organized in four domains (patient care, communication, practice management, and professionalism). **Results:** A total of 144 students completed an initial self-assessment (111 students with and 33 without prior experience). Ninety students had prior experience in community pharmacy and 23 in hospital pharmacy. Combining domains, students with prior experience reported higher perception of abilities than those without (p = 0.019). A difference was noted in students with previous hospital experience (p = 0.025) but not in those with previous community experience (p = 0.381). No differences were noted at the domain level for those with any prior experience versus those without. Students with experience in hospital pharmacy self-rated statistically higher than those without hospital experience in patient care (p = 0.045) and professionalism (p = 0.004) domains. **Implications:** Students’ pharmacy-related experience showed an inconsistent influence on their perceived abilities. How previous experience alters expectations or learning on IPPEs or APPEs needs further study.

**The Evaluation of Educational Games during Advanced Pharmacy Practice Experiences.** Sean Barclay, University of Southern Nevada, Meghan Jeffres, University of Southern Nevada, Ragini Bhakta, University of Southern Nevada. **Objectives:** To test the efficacy of two card games, Infectious Disease Rummy (IDR) and Cardiology Gold Fish (CGF), in students during their Advanced Pharmacy Practice Experiences (APPE). The second objective was to assess student satisfaction. **Method:** Students were required to play each game for a minimum of one hour for at least three sessions over a period of six weeks. Prior to playing either game students took a 90 question pre-test including 30 ID questions, 30 cardiology questions and 30 miscellaneous pharmacy practice questions. Six weeks after the pre-test, students took the same assessment (post-test) and a survey. **Results:** Twenty-eight students completed the pre- and post-test and 26 (93%) completed the survey. Significant increases in post-test scores were seen in all 3 categories, cardiology 21.8% (p < 0.001), ID 9.5% (p < 0.001), miscellaneous 6.4% (p = 0.001). Cardiology test scores improved significantly in comparison to random test questions (21.8% vs. 6.4%, p = 0.001). A non-statistical difference was seen in ID questions vs. random questions (9.5% vs. 6.4%, p = 0.206). Survey results indicate >90% of students Agreed or Strongly Agreed CGF and IDR were valuable additions to their learning, made them think about cardiology mechanisms and ID in new and different ways, and would recommend the games to their peers. **Implications:** Student post-test scores were significantly higher after playing CGF and IDR. These games are an innovative active learning tool. The incorporation of games can enhance the learning experience of students completing their APPEs.

Web-based Modules for Orienting Health Sciences Students to a Field Experience in Community Health. Marion K. Slack, The University of Arizona, Marylyn M. McEwen, The University of Arizona, Anahi Arana, The University of Arizona. **Objectives:** We describe web-based instructional modules developed to orient health sciences students to a field experience in interprofessional community health focused on health promotion; the modules develop a common understanding and vocabulary among students from different disciplines. **Method:** Faculty from two universities representing pharmacy and other health professions collaboratively developed four modules. The organizing framework was borrowed from cultural competence and consisted of: 1) an attitudes section illustrating the importance of the topic; 2) a knowledge section identifying relevant content; and, 3) a skills section modeling professional competence. A threaded case study was used with the content of the case adapted to the specific module. Feedback was obtained from a debriefing session. **Results:** The four modules were: cultural competence, interprofessional teams, health of rural/underserved populations, and community health. A threaded case study describing an individual patient was used; embedded reflective questions focused attention on relevant aspects. Specific content appeared in the knowledge section illustrated by an addendum to the case study. The skill section shifted perspective to professionals providing care who modeled relevant skills. A total of 28 students and 23 staff completed the modules; the student mean rating was 3.2 (5 point scale). Comments were positive and the case seemed realistic. Students readily related the content to experiences in the target community. The primary problems were technical (e.g. video difficulties & navigation problems). **Implications:** Web-based modules appear to be an effective method to orient students to a community-based interprofessional practice experience. To facilitate navigation, the embedded questions are being replaced with printable worksheets.

**Theoretical Models**

Advocating for the Profession through a Public Health Rotation. Thomas E. Buckley, University of Connecticut. **Objectives:** To provide pharmacy students with a hands-on approach to identifying and resolving health disparities as a method of advocating for their profession. **Method:** An APPE rotation was designed to enhance students’ awareness of diverse health disparities that exist in the Cambodian American population. Through identifying social determinants of health, students interact with medical providers and community health workers providing medical and psychological services. Each student was responsible for at least one project, including literature review and presentation of a health disparity issue in this population that can be addressed by a pharmacist. Students had the opportunity to advocate for their profession by discussing their experiences with state legislators and policymakers. **Results:** The students enjoyed their experiences in this rotation. They expressed the uniqueness of learning how health disparities affect specific health issues of this community. Each student has incorporated public health activities in their pharmacy career or pursued further public health education. Students’ advocacy messages conveyed the diversity of services and accessibility in their advocacy message, and knowledge they had gained in their experience. **Implications:** Prior to this rotation, students had minimal experience identifying health disparities and interacting with an under-served ethnic population. Recognizing potential to expand their scope of practice, these students will define new practice paradigms for the profession. Developing curriculum highlighting pharmacists’ role in addressing health disparities will support current and future pharmacists’ career opportunities.

Assessment Tool for Planning and Implementing Pharmacist-Directed Health Promotion Activities. Hoai-An Truong, University of Maryland, Natalie A. DiPietro, Ohio Northern University. **Objectives:** To develop an assessment tool for pharmacists to systematically plan
Community-based Introductory Pharmacy Practice Experiences to Enhance Communication and Interviewing Skills among First-year Student Pharmacists. Nicole Culhane, College of Notre Dame of Maryland, Kwadwo Amankwa, College of Notre Dame of Maryland, Michelle A. Fritsch, College of Notre Dame of Maryland, Jane Frumin, College of Notre Dame of Maryland. Objectives: To improve medication use in vulnerable populations within the Baltimore community as well as to enhance communication and interviewing skills among first year student pharmacists. Method: A partnership was formed between the School of Pharmacy and the Housing Authority of Baltimore City with the intent of teaching residents how to safely use medications while giving first year student pharmacists the opportunity to practice interviewing and communication skills. Pairs of student pharmacists were assigned to a resident in one of three mixed population housing facilities. Student pharmacists visited residents once weekly. Week one: complete medication history taken; week two: clarifying questions obtained; week three: patient questions answered and medication record given to resident. Faculty provided direct oversight to student pharmacists throughout the entire process. Student pharmacists will be visiting the same residents during the spring semester for three follow-up visits and medication use presentations. Results: Student pharmacists learned how to take a medication history and supplied residents with a current medication record. They also learned how to effectively interact and communicate with a vulnerable population. Residents expressed gratitude toward the student pharmacists for helping them better understand how to use their medications and the importance of adherence. Implications: The primary goal of this project was to forge community partnerships to enable student pharmacists to interact with residents early in the curriculum. The residents and student pharmacists alike benefited from this experience as evidenced in the reflective writings of the student pharmacists. We will continue to build on this partnership in the coming years.

Delivering Asthma Education to Schoolchildren with Asthma and Their Parents/Caregivers: A Longitudinal Service-Learning Model. Michael J. Smith, The University of Oklahoma, Alice E. Kirkpatrick, The University of Oklahoma, Kimberly M. Crosby, The University of Oklahoma, Heather Messer, American Lung Association, Marla Taylor, Tulsa Health Department, Vincent Kirkes, Merck & Co., Inc. Objectives: 1) Sustain a service-learning activity implemented in the previous year; and 2) create a new learning opportunity within the existing activity that supports a longitudinal experience. Method: A community-based service-learning activity was developed and implemented last year at the OU College of Pharmacy (COP) in which second year students of the professional degree program delivered a structured American Lung Association (ALA) asthma curriculum (“Open Airways for Schools”; “Asthma 101”) to children with asthma in two public schools in Tulsa and their parents/caregivers. The activity was developed through a partnership among community advocates interested in addressing asthma including OU COP, ALA, Tulsa Public Health Department, Union School District, and a pharmaceutical manufacturer. P2 students completed an online asthma module and live training session sponsored by ALA. Students then presented the curriculum to school children and separately to parents/caregivers in Spring 2009. During Spring 2010, a continuity of service-learning was implemented in which current P3 students who participated in the activity last year served as pharmacy student mentors to current P2 students training to deliver the asthma education program. Results: This year seven P2 students volunteered to deliver asthma education, and their training overlapped with the respiratory module in the pharmacy curriculum. Three P3 students are continuing their participation this year by serving as mentors to P2 students. Implications: A continuity of service-learning experiences can be designed in parallel with a pharmacy curriculum. Such a structure may complement learning in the classroom and contribute toward developing students from the P2 to P3 year.

Design of a Drug Discovery, Development, and Commercialization Elective. Joseph D. Ma, University of California, San Diego, Williams Ettouati, University of California, San Diego. Objectives: To design an elective course encompassing drug discovery, development, and commercialization for pharmacy, medical, business, and graduate students. The course outcome was to increase students’ knowledge of drug discovery, development, and commercialization. Method: Meetings between faculty from the Schools of Pharmacy, Medicine, and Business were conducted to determine student participation in an interprofessional education elective. Literature searches and personal communication with faculty from other schools who have offered a similar course were performed. Teaching techniques were identified, including lecture, small group assignment, student presentation, and round table session. Senior executives and professionals (PharmD, MD, MBA, and PhD trained) employed at locally-based pharmaceutical companies were selected as lecturers based on area of expertise. For the small group assignment, comprising of 1 student from each School, the group will present a product lifecycle strategic plan (PLSP). The round table session will comprise of a 4 to 5 member panel to provide career path perspective. To assess student knowledge, pre- and post-test questions utilizing an automated response system for each lecture are in development. Questions will be mapped according to the first 3 levels of Bloom’s taxonomy. Results: The 3 unit elective will begin in Spring 2010 and comprise of didactic teaching (20 h) and PLSP self-study (10 h). Course topics, a sample PLSP, and student knowledge and course evaluations will be highlighted. Implications: The elective should increase students’
knowledge, attempt to address ACPE Standard 12 in promoting interprofessional education, and provide the framework for future implementation at other institutions.

Development of an Academic Experiential Rotation to Promote Academia as a Career Goal. Eric K. Gupta, Western University of Health Sciences. Objectives: The objectives of this model are to expose students to a real-world academic experience, to facilitate their growth as academicians, and to strengthen their desire to pursue academia as a career goal. Method: The academic experiential rotation lasts six weeks and coincides with a particular teaching block. No more than two rotational students are able to participate in this rotation per block. Since they have not yet graduated, they are not able to deliver didactic lectures. However, their responsibilities include creating the SOAP cases and mini-cases for the active learning sessions, leading active learning skills development, facilitating the case discussions, and leaving feedback on the SOAP notes. On the academic side, the preceptor teaches the students how to write exam questions, create grading rubrics, and interpret item analyses and other related academic procedures. Results: Seven students have participated in the academic experiential rotation over the last four years. Two of the students just recently completed the rotation and are pursuing residencies with the intent to apply for academic positions in the future. Out of the five that have graduated, one chose not to pursue a career in academia, three completed residencies and applied for academic positions, and one is considering a second-year residency before applying to academic positions. Implications: This academic experiential rotation model may be a means to increase the number of faculty candidates and provide them with basic skills to function in the academic setting.

Healthcare-Related Service Learning in an Inner-City Secondary School. Nicholas Leon, Thomas Jefferson University, Andrea S. Joseph, Thomas Jefferson University, Jessica Roth, Thomas Jefferson University, Gerald E. Meyer, Thomas Jefferson University. Objectives: To describe a novel Introductory Pharmacy Practice Experience (IPPE) implemented by the Jefferson School of Pharmacy (JSP) where inner-city high school students benefit from interactions with P1 student pharmacists. Method: P1 JSP student pharmacists are required to complete a one-credit, pass/fail healthcare-related, service-learning IPPE designed to instill a basic understanding of pharmaceutical care through community involvement. An inner-city high school is one of the sites identified for completing this IPPE requirement. Longitudinally throughout the semester, P1 student pharmacists assist a JSP faculty member in exposing inner-city ninth and tenth grade students to the pharmacy profession by providing classroom instruction on basic aspects of pharmacology, therapeutics, and health-related decision making. Each week, P1 student pharmacists briefly review the previous week’s material by administering and discussing quizzes and are responsible for multiple units of classroom instruction. They also design/facilitate a group project with the high school students. Results: P1 student pharmacists utilize their knowledge and skills to illustrate fundamental health and pharmacologic concepts at an audience appropriate level while simultaneously building relationships with the school community. Inner-city secondary school students may have an increased awareness of opportunities in pharmacy and a familiarity with health-related knowledge potentially increasing their own health literacy. Implications: Success with this current, novel experience highlights the need to be creative in expanding our opportunities for healthcare-related service-learning IPPE sites. As observed with this novel experience, a quid pro quo can be established where quality service-learning IPPE sites are gained, aspects of health literacy may be increased and student minds are enlightened.

Interactive Approaches to Teaching Clinical Toxicology: Integrating Pharmaceutical Sciences, Drug Information and Poison Control Centers. Emily R. Esposito, Sullivan University, Wasana K. Sumanasekera, Sullivan University, Miriam A. Ansong, Sullivan University, Henry A. Spiller, Kentucky Regional Poison Center, Gopal Pillai, Sullivan University. Objectives: To design and implement an interactive approach to teaching clinical toxicology in pharmacy curriculum. Method: Clinical Toxicology is a discipline that explores the adverse effects of xenobiotics on living organisms. Currently, toxicology is not required by ACPE curriculum standards and thus limited literature exists on experiential learning in the field of toxicology. In designing this elective, we have integrated pharmacological and toxicological expertise from the department of pharmaceutical sciences, drug information and poison control centers. A combination of didactic and experiential learning will facilitate doctor of pharmacy students’ comprehension and retention of key toxicology principles. Dynamic teaching methods include lectures, guest speakers from experts in the field, drug information resources, an on-site poison control visit, and opportunities for students to investigate an original toxicology case based on both lecture and poison control center experience. Once a hypothesis is formed, students will then utilize skills obtained from the drug information center to develop a search strategy, identify resources, and retrieve current literature. Retrieved literature will be evaluated, synthesized, and used to formulate a response to their specific toxicology case. Student findings will then be presented in the form of a research presentation and prepared for publication in the drug information center newsletter. Results: Course structure, design, program outcomes, course outcomes, course objectives, and student research data/case study material will be presented. Implications: Skills obtained from this course will enhance the future pharmacist’s ability to react to an acute poisoning episode in a patient and enrich pharmacy curriculum.

Introducing Research Careers to Pharmacy Students: Igniting a Flame, not Scalding for Life. Patrick G. Clay, Kansas City University of Medicine and Biosciences. Objectives: Providing a clinical research intensive rotation represents an innovative manner to increase pharmacy students to careers in research. Many students get no exposure to clinical research. Introducing clinical research and exposure to the core elements of each phase of the drug study may result in deeper understandings of clinical research and open doors for career paths in clinical research. Method: Students are oriented to research-center, the on-site facilities, and staff on first day. Preceptor and students discuss daily operations including interdisciplinary staff roles. Preceptor also introduces rotation goals and objectives that must be met in order to pass. Student is provided training calendar and deadlines. Preceptor meets with student as warranted to mentor completion of materials. Results: Scholarly, to date this model has had one therapeutic review, two case reports and three posters presented generated by student’s efforts. Since 2005, numerous students have been taken through the process of formal manuscript development and many have collaborated with preceptor on protocol development/writing. All students complete structured clinical research coordinator training course and by end of the rotation are well versed on all regulatory requirements needed to conduct research during post-doctoral training. Implications: Increasing access and enhancing exposure to research specific training may improve the percentage of pharmacists choosing research as a career. This program substantially lessens the need for post-graduate program directors to train.
new residents on research process and regulations. Lastly, this interdisciplinary program introduces other graduate trainees to the expertise gained when working alongside trained pharmacists.

The Farm Worker Family Health Program: A Service Learning Experience for Pharmacy Students. Trina J. von Waldner, The University of Georgia. Objectives: Describe the community partnership between academia and public health that deliver health care services to over 1000 farm workers and family members each year in rural South Georgia. Demonstrate the importance of pharmacy students as part of the multi-disciplinary team of nursing students, physical therapy students, dental hygiene students, and psychology students. Advocate for continued involvement in the program by pharmacy students as a service learning introductory pharmacy practice experience. Method: Service learning is an integral part of the pharmacy curriculum. An elective course entitled Public Health Outreach for Pharmacy was designed to incorporate the concepts of public health, community outreach, and service learning. Students who participated in the 2 week experience in Summer of 2009 took the elective course in the Fall of 2009 to learn more about public health outreach and as a forum to reflect on the experience. Students participating in the 2010 experience will be able to take the elective course in Spring of 2009 before the summer experience. Results: The numbers of second-year students requesting to participate in the experience exceeded the space available for 2010 and first-year students are already requesting to participate in 2011. This innovative approach of learning public health concepts combined with outreach to migrant workers qualified the program as an introductory pharmacy practice experience (IPPE). IPPE’s are required in the new standards for pharmacy education. Implications: The elective and the outreach opportunity will potentially serve as a springboard for the Joint Pharm.D./M.P.H. degree with the UGA College of Public Health.

Using Facebook as a Communication Tool in Experiential Learning and Admissions. April G. Staton, Auburn University, Kathy Kyle, Auburn University, Laurie K. Smith, Auburn University. Objectives: To identify how one school of pharmacy uses Facebook for information dissemination and to improve efficiency in communications in the admissions process and experiential education. To demonstrate how both units collaborate with other schools of pharmacy. Method: Beginning with the P1 class of 2008, the admissions office encouraged each class develop a student driven Facebook group. Students receive group information in their admissions letter. This means of communication is used until matriculation. The experiential office developed a group for preceptors in 2009 as a means of connecting with preceptors and disseminating programmatic information. Results: Facebook groups for students provide an excellent means of communication and dissemination of information. It connects incoming students with current students and decreases the number of calls to the admissions office since most questions can be answered online. Admissions/Student Services, as members of the group, are able to keep informed on the personality of the class and issues such as professionalism. Preceptors, who already use Facebook, are provided an online location for various information including upcoming events, deadlines and continuing education. They may also use the group as a means of communicating with each other about precepting experiences. Implications: Schools should not underestimate the appeal of this online social tool for students and preceptors. Future uses include establishing a Facebook group to inform and prepare pre-pharmacy candidates. Another future use may include an area where employers could post job opportunities.

Work in Progress

A Collaborative University / County Partnership to Provide IPPEs that Improve Health Awareness and Outcomes. Kay L. Brooks, The University of Georgia, Deanna W. McEwen, The University of Georgia, Lori J. Duke, The University of Georgia, Whitney L. Unterwagner, The University of Georgia. Objectives: To develop a mutually beneficial partnership between UGA College of Pharmacy and Athens-Clarke County (ACC) government designed to provide IPPEs aimed to improve health accessibility, increase health literacy, and reduce health insurance costs. Method: 128 second year pharmacy students were paired with 70 ACC firefighters for a two-semester, cardiovascular risk reduction program. Firefighter participation was incentivized through reductions in health insurance premiums. Throughout the program, students provided health education and monthly health assessments to evaluate individual progress toward lifestyle changes. The longitudinal program provided students an opportunity to develop essential patient care skills (BP, glucose, cholesterol measurements), educate consumers on pertinent lifestyle modifications to improve health status, and refer patients as needed for physician follow up. Results: A variety of program impact measurements are being assessed. These include: pre and post health literacy measurements, identification of common risk factors, and attainment of evidence based goals. Student mastery of clinical skills and knowledge will be assessed by use of a yearend OSCE. Implications: The University / County partnership has expanded the scope of the ACC Government incentive-based wellness program while providing a valuable student learning experience. Participants in the program have the potential to benefit from the following: reduced health insurance premiums, improved health outcome measures, and increased health literacy. Students within the program have a unique opportunity to develop a strong clinical foundation that can be applied to future practice experiences involving more complex patient types. Program expansion to other county employee groups is planned for Fall 2010.

A Comparison of the Structure of the Offices of Experiential Education in a Regional Consortium. Brett Feret, University of Rhode Island, Kathleen O. Fisher, University of Rhode Island, Michael L. Simeone, University of Rhode Island. Objectives: The New England Regional Departments of Experiential Education (NERDEE) consortium of 9 colleges of pharmacy collaboratively approaches pharmacy experiential education (EE) issues through their network. Student populations and pharmacy programs within the colleges of the consortium vary in size and curriculum. Offices of Experiential Education (OEE) within the consortium also vary in structure and scope of responsibility. A comparison of the structure of the OEE within the consortium can provide insight into the functions and roles of the members of the NERDEE consortium, as well as serve as guidance to new schools of pharmacy and administrators. Method: A survey was designed and administered to the Directors of 9 OEE’s comprising the NERDEE consortium. The survey captures the structure of each office, titles, and the role and responsibility of each office member, as well as student populations and type of appointments (faculty vs. staff) within the OEE. Results: Summary statistics will be used to report the results of the survey(s). Implications: The NERDEE consortium collaboratively addresses issues in Pharmacy Experiential Education within the New England region. The structure and areas of responsibility of the personnel within the OEE differ depending on the EE curriculum and design. The varied organizational structures and curriculum provide diverse opinions, solutions to EE issues, and collaborative opportunities among the consortium schools. A
description of organizational models among the consortium also helps to benefit new schools implementing an experiential program either alone or with the help of consortium partners.

A Review of College Communication with Preceptors. Nancy E. Ray, The University of Oklahoma, Vincent C. Dennis, The University of Oklahoma. Objectives: The primary objective of this study is to determine the perceived value and optimal timing of quality improvement activities performed by faculty in conjunction with experiential education rotations conducted by adjunct faculty during the fourth professional year. Method: The Review of College Communication with Preceptors was developed and beginning February 9, 2010, 237 pharmacy preceptors will be sent the survey electronically. Data received from the survey will be compiled and stored by Nancy Ray. The deadline for data collection is February 23rd, 2010. After all the information is gathered in February, 2010, the data will be analyzed using the appropriate descriptive statistics. Results: There are no results to discuss at this time since this is a work in progress with the recent launch of the survey. Implications: The information gained from this study will aid in planning and/or modifying procedures related to quality improvement activities in subsequent years of the experiential program. This information is expected to be of interest to the larger pharmacy community in the area of program management and improvement.

A Unique Experiential Learning Approach in Pharmacy Education: Introduction to Basic Cell Biology Laboratory Research. Wasana Sumanasekera, Sullivan University, Gopal Pillai, Sullivan University, Hieu T. Tran, Sullivan University. Objectives: To design and implement a research based experiential learning elective in pharmacy education and to facilitate students’ grasp of concepts utilizing an experiential approach. Method: A comprehensive literature search was performed using resources such as PubMed and the American Society of Health System Pharmacists (ASHP) web sites to ensure the proposed research is a unique approach. Cell Biology laboratory techniques are crucial in conducting research in several disciplines including environmental toxicology and cardiovascular research. For this elective, experiments will be carried out using rat cardiac stem cells as the model. The effect of cigarette smoke on the functions of rat cardiac stem cells will be investigated. Students for this elective will be selected via a formal interview as carried out by the instructor. The purpose of the interview is to find out whether students have a true interest and dedication to research. Students will be able to participate in several hands on activities including sterile techniques of cell culture and cell based assays. Assessment materials include research participation, scientific writing, and survey participation as conducted by the instructor. In addition, students will be able to present the research in scientific meetings. Results: Program level outcomes, course outcomes, course objectives, laboratory techniques, experimental data, and assessment tools will be presented. Implications: Prepare students for higher education, future research careers, and promote technical, analytical and critical thinking skills that are needed to succeed as a future pharmacist. 2. To develop students’ intellectual curiosity and personal commitment to ensure ongoing life-long learning.

A Unique Model for Advanced Pharmacy Practice Experiences (APPE): First-Year Experience. Lori Ernsthauen, The University of Findlay. Objectives: The primary objective is to develop and implement 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. This model will provide a more controlled structure for assessment to ensure all core learning objectives and longitudinal outcome measures are met. Secondary objectives include determining whether students, preceptors, hub site coordinators and college of pharmacy faculty members perceive a benefit from the hub site model and identifying areas of improvement within the model. Method: Preceptor evaluations of students, longitudinal outcome assessment measurements, longitudinal written case study evaluations and competency exam results will be compiled. An end of term evaluation will be administered to students, preceptors, hub site coordinators and faculty members. Results: Pending. Implications: Should all objectives and outcomes measures be met, and if positive feedback is obtained from the stakeholders, the college would continue with this unique model, the model would be validated and the model could be adopted by other colleges or schools. Should objectives and outcome measures not be met, or feedback is negative, the college will re-evaluate the model and consider necessary modifications to enhance the method of delivery of APPEs.

An Advanced Pharmacy Practice Experience (APPE) Rubric to Enhance Preceptor Effectiveness. Gina M. Prescott, University at Buffalo, The State University of New York, Peter M. Brody, University at Buffalo, The State University of New York. Mary T. Pasko, University at Buffalo, The State University of New York. Gayle A. Brazeau, University at Buffalo, The State University of New York. Objectives: This project involved the development of a rubric to guide students in their assessment of their APPE preceptors and to provide constructive feedback for individual preceptor development. Method: An analytic assessment rubric based upon ACPE Standards and the literature was developed which consisted of specific and objective stratifications for eleven domains with 5 scoring criteria. Current 4th year professional students (N=115), were provided with an overview of the purpose of this IRB approved study and an information sheet on how to complete the rubric. Each student received an individual user id and password to access a secure website to evaluate their preceptors using this rubric during the last week of two rotations. Students participating are also required to complete the original, standard 5-point Likert Scale assessment tool. Students and preceptors will complete an online survey anonymously at the end of the second rotation to provide feedback regarding the new rubric compared to the current 5-point Likert Scale assessment strategy. Formative feedback and intraclass correlation will be utilized to modify and validate the rubric. Results: Twenty-three students are participating in the pilot-phase for developing a validated rubric and helping guide preceptor assessment. Implications: No studies in pharmacy have been conducted evaluating the use of a rubric to assist students to objectively assess preceptor effectiveness. This rubric allows students to easily assess preceptor quality and provide specific feedback to preceptors to refine and improve skills for effective precepting activities.

An Examination of Operational Definitions for Core Required APPEs. Jennifer Danielson, University of Washington, Teresa A. O’Sullivan, University of Washington, Stanley S. Weber, University of Washington. Objectives: ACPE’s Standards 2007 required pharmacy schools to meet several new guidelines regarding APPEs. These guidelines were not well defined for the core APPEs: community pharmacy; hospital or health-system pharmacy; ambulatory care; and inpatient/acute care general medicine. Our objective is to determine how schools operationally define and differentiate core APPEs. Method: A survey, developed, piloted, and approved by Human Subjects, was distributed to PEP directors/faculty at all accredited

pharmacy schools. Participants were contacted electronically, and survey conducted via secure website for anonymity. **Results:** Preliminary results (25% of schools reporting) revealed many discrepancies in definitions for core APPEs. A trend toward distribution activities was identified for hospital or health-system experiences (as compared to inpatient/acute care general medicine experiences). Few consistencies were apparent in descriptions of ambulatory care or community pharmacy experiences. Some schools use clinics exclusively for ambulatory care APPEs, but others allow community pharmacies with MTM or specialty services. While some schools require rounding on an inpatient/acute care general medicine APPE, no consistent description of this core experience was identified. Eighty-two percent of respondents require a “general medicine” rotation, but only 33% described a general medicine experience for the core inpatient/acute care general medicine APPE. A consistent practice setting for and definition of “general medicine” was not determined. Factors contributing to disparity in definitions include inconsistent availability of paid faculty preceptors and possibly competition for sites. **Implications:** Preliminary results suggest that, if inter-program consistency is desired, further guidance from ACPE is needed and AACP PEP Section efforts should focus on normalizing these core experiences.

**An Experiential Model of Pharmacy & Dentistry Partners Promoting Public Health in Underserved Populations.** Karen K. O’Brien, Creighton University, Kimberly A. Norman, University of Nebraska Medical Center, Linda K. Ohri, Creighton University. **Objectives:** Engage pharmacy students in interprofessional service learning to promote dental public health, and evaluate quality of the educational experience. **Method:** The authors were invited in March to collaborate with dentists, hygienists, technicians, and nurses to provide pharmacy services at a two day free dental health clinic held in July, 2009. Thirty six pharmacy students and 36 pharmacist volunteers delivered pharmaceutical care to approximately 1400 patients. Pharmacy teams conducted physical assessments and obtained patient medication histories; evaluated need for and administered prophylactic antibiotics; performed drug utilization review; wrote prescriptions for non-formulary medications; and counseled patients on formulary medications dispensed by dentists incidental to practice. Following the clinic, pharmacists and students were surveyed electronically (Survey Monkey) about their role in the event. They were asked to describe educational value and personal satisfaction gained from the activity, obstacles encountered, and willingness to participate in similar future activities. Suggestions were solicited to improve processes. **Results:** Forty five (30 pharmacists and 15 students) of 72 participants (63%) completed the survey. Of all respondents, 93% identified the event as a worthwhile inter-professional service learning experience, and indicated willingness to volunteer for similar future events. All responding pharmacy students described the experience as personally rewarding. Pharmacists noted that nursing and dental colleagues particularly complimented the pharmacy students’ patient assessment skills. **Implications:** Students practiced previously learned clinical skills in a unique environment. The pharmacy professionals expanded non-pharmacy colleagues’ understanding of their capabilities. This collaboration enhanced the level of care provided to the community.

**Analysis of Affiliation Agreements and Compliance Management for Experiential Education: Experiences of the SPEEC Consortium Schools.** Michael D. Hogue, Samford University, James W. Fetterman, South University, Lori J. Duke, The University of Georgia, Marsha N. Gilbreath, Mercer University, April G. Staton, Auburn University, Nancy E. Shapiro, Philadelphia College of Osteopathic Medicine - Georgia, Elizabeth S. McCullough, Samford University, Eva Click, Samford University, William P. Wynn, South University. **Objectives:** The intent of this work is to describe the increasingly extensive requirements for compliance with experiential affiliation agreements. The impact of these requirements on staffing, as well as strategies to ensure compliance with these contractual arrangements, are discussed. **Method:** An analysis of the requirements of experiential affiliation agreements was conducted by the six individual member schools of the consortium. The schools each identified compliance parameters which are a part of the school’s standard affiliation agreements versus those which are imposed by the external affiliate partner. Schools estimated the amount of staff time annually (in terms of FTEs) required to administer the compliance requirements of experiential affiliations. **Results:** The vast majority of compliance issues related to delivering the experiential component of the curriculum are imposed by the external affiliate. Ensuring compliance with these contractual requirements is a significant burden to the schools. The data analysis will be presented. **Implications:** Experiential program directors are seeing an increasing number of requirements placed upon schools and colleges of pharmacy in order to be able to send students into the site for experiential coursework. We attempt to quantify the impact of these requirements. We believe that all schools, both existing and newer programs, need to more fully understand the impact of these requirements when budgeting for personnel and other experiential program resources.

**Assessment of the Effectiveness of Faculty Facilitated Institutional Introductory Pharmacy Practice Experiences at Four Hospitals.** Nicole L. Metzger, Mercer University, Angela O. Shogbon, Mercer University, Pamela M. Moye, Mercer University, Karla T. Foster, Mercer University, Phillip S. Owen, Mercer University. **Objectives:** The primary objective is to assess the effectiveness of four diverse institutional Introductory Pharmacy Practice Experiences (IPPE) at meeting instructional objectives as defined by the Accreditation Council for Pharmacy Education (ACPE). **Method:** A faculty-facilitated program was implemented at four hospitals in August 2009 to increase the number of institutional IPPE hours. Students are assigned to one of four institutions and are present four hours each week for four consecutive weeks. In Spring 2010, third year IPPE students (n=90) will be administered an objective pre-test and post-test to assess their acquisition of basic institutional pharmacy knowledge. The test includes demographic questions and multiple choice questions designed to assess ACPE objectives. Comparisons will be made between pre- and post-test results. Students will be stratified by prior hospital work experience and by institution. **Results:** Preliminary analysis of 29 students revealed no statistically significant difference between pre-test and post-test scores (75% vs. 83.3%). Even though students with hospital experience scored higher on the pre-test (76.8% vs. 69.6%) and post-test (82.4% vs. 75.4%) compared to students with no experience, this was not statistically significant. More students reported they did not feel confident in their knowledge of hospital pharmacy practice on the pre-test compared to the post-test (72% vs. 5%). More students reported that they were likely to pursue a career in hospital pharmacy after completing institutional IPPE (post-test 38% vs. pre-test 21.9%). **Implications:** Results of this study may aid schools of pharmacy not affiliated with academic medical centers in designing, implementing, and assessing an institutional IPPE program.

**Blogging: A Unique Forum for Student Presentations and Reflection.** Christine M. Klein, Mercer University. **Objectives:** On-line discussion groups or web logs, more commonly known as blogs, are increasingly being used in educational activities such as course management and reflective journaling. The objective of this research is to
report on the implementation and implications of utilizing a blog for student presentations and reflection in two components of Introductory Pharmacy Practice Experiences (IPPE): Patient Caring and Service Learning. **Method:** Following the adoption of an internet-based system for course management, and as a result of increasingly complicated student and class schedules, a new forum for student presentations was necessary. Students were divided into small (n = 4) discussion groups and given specific information on the format and structure of their presentations and reflective discussions. The resulting reflective comments were categorized to evaluate emerging trends. Students were surveyed to determine their satisfaction with the format. **Results:** Analysis indicates that students are able to identify self-growth in their professional skills including professionalism, empathy, and cultural competence. Analysis also indicates students find this experience to be worthwhile. Data (student comments) from the experience and student survey results will be presented. **Implications:** Blogging affords students a unique means for presenting Patient Caring and Service Learning experiences. This format allows for more critical thinking in providing reflection on personal challenges, rewards, and improvement. The students were able to provide suggestions and feedback to their peers, thereby reinforcing the idea that they are members of a professional community. Blogging has shown to be a successful forum not only for presentations but for reflective activities.

**Competencies: From Definition to Performance.** Cynthia J. Boyle, University of Maryland, Hoai-An Truong, University of Maryland, Lynette Bradley-Baker, University of Maryland, Cherokee Layson-Wolf, University of Maryland, Kathryn A. Walker, University of Maryland, Douglas Nutter, University of Maryland, Emily Dotter, University of Maryland. **Objectives:** To develop and implement competency-based assessment criteria for Advanced Pharmacy Practice Experiences (APPEs); to monitor and evaluate individual and aggregate student performance by competency and course; and to develop student-specific remediation based upon performance. **Method:** The Experiential Learning Committee reviewed students’ skills-based APPE evaluations for the past five years (2004-2009). In support of curricular revision, the committee mapped APPE objectives to the School’s terminal performance outcomes, developed standardized performance definitions, and implemented competency-based criteria for APPE assessment. Syllabi were reduced from 33 to 6, and outcomes were unified across courses. Performance expectations were increased after students had completed three APPEs, and grades were later determined from performance ratings. **Results:** Preliminary analysis shows that the streamlined competency evaluations have enabled improved course monitoring and have enhanced tracking of individual students. The School developed student-specific remediation for four students who failed APPEs based upon specific competencies for which students did not meet performance expectations. **Implications:** As the first school to develop experiential education which earns academic credit and hours toward licensure in tandem, the University of Maryland School of Pharmacy has long provided comprehensive introductory and advanced practice experiences. These recent enhancements help students to build on skills and improve communication of course expectations to students and preceptors. Ongoing monitoring will be utilized by the Assessment Committee for further curricular improvements, and additional preceptor development will target APPE assessment, using aggregate results and standardized scenarios. The focus on performance, rather than grades, promotes fairness, rigor, and consistency throughout APPEs.
Pharmacy (JSP) Introductory Pharmacy Practice Experiences (IPPEs). **Method:** JSP requires six distinct IPPEs to nurture practical application and reinforcement of accumulating knowledge and skills; they provide students the opportunity to become immersed in a variety of pharmacy settings. IPPEs are 3 hours/week each semester for P1s and P2s and progress to 6 hours/week for P3s. IPPE activities are designed to correlate with didactic coursework. P1 IPPEs are conducted in community pharmacies and healthcare related service-learning settings where communication skills, problem identification, medication dispensing and distribution are emphasized. P2 students develop pharmaceutical care plans and apply physical assessment skills in ambulatory sites and address medication safety and regulatory issues in hospital pharmacies. P3 students broaden their focus from patient-centered to population-based care during inpatient/acute care experiences and a selective IPPE. Student perception of linkage between each IPPE and JSP coursework is assessed through survey and course evaluation at the end of each semester. **Results:** To date, P1 and P2 IPPEs have been implemented. Students perceive a strong correlation between IPPEs and the knowledge, skills and attitudes attained in didactic classes. Students describe IPPEs as having “solidified important information in my mind when I see it in practice” and “given me an opportunity to see and practice what I learned in class.” **Implications:** Required, longitudinal IPPEs in diverse environments create opportunities for students to apply knowledge and skills and cultivate attitudes fostered in the classroom. Future assessment will further appraise the impact of this integrated approach to learning.

**Development and Implementation of a Regional Collaboration for Advanced Pharmacy Practice Experiential Education.** Sarah E. Brown, Pacific University Oregon, Kenneth C. Jackson, Pacific University Oregon, Lindsay M. Christensen, Pacific University Oregon, Susan M. Stein, Pacific University Oregon. **Objectives:** The state of Oregon has two schools of pharmacy, both located in the northwestern corner of the state. Historically experiential education has been focused in this region. To facilitate outreach and serve a more diverse population, the School made a conscious effort to integrate experiential educational opportunities throughout the state. The School decided to collaborate with a health system in the underutilized southern Oregon region. Since the School and health system are separated by almost three hundred miles, one goal was to have the health system provide enough opportunities for students to remain in this area for a majority of the advanced experiential year. **Method:** The two institutions created a co-faculty position located at one of the health system’s hospitals in the city of Medford. This faculty member provides a link between the School and the health system to ensure high quality preceptors and experiential rotations. By working with multiple departments within the health system, all four types of required and numerous elective rotations have been offered. **Results:** During year one the health system provided forty-four rotations: thirty-two required and twelve elective. This approach opened up the possibility to facilitate more students in southern Oregon, allowing expansion within the region for experiential education. Other sites are becoming involved in an expanding network. Further details on rotation development and implementation will be discussed. **Implications:** This new collaboration offers an alternative approach to dealing with the ever expanding needs of the pharmacy academia to provide experiential education to under-served and under-represented populations.

**Development and Validation of an Assessment Tool for Evaluating Students on Introductory Pharmacy Practice Experiences (IPPEs).** Jodie Malhotra, Regis University, Julie C. Kissack, Harding University, Ruth E. Nemire, Touro College of Pharmacy-New York, Kathy D. Webster, University of Maryland Eastern Shore. **Objectives:** IPPEs provide students with direct patient contact early in the curriculum. These courses ought to prepare students with the knowledge, skills and abilities needed for Advanced Pharmacy Practice Experience courses (APPEs). A general assessment tool that is flexible is necessary. As a consortium of leaders our purpose was to develop and validate an assessment tool to evaluate students on IPPEs. **Method:** An assessment tool was developed by faculty leaders from four pharmacy schools. Because IPPEs are intended to prepare students for APPEs, we used competencies previously developed from the SUCCESS tool (used to assess students on APPEs) and modified skill statements to a level appropriate for IPPEs. Additional competency and skill statements were developed for public health and management. A total of fifteen competency categories were identified. Following the SUCCESS model each of these competency categories included skill statements with definitions. Students will be assessed as having performed at the highest level, satisfactory level, unsatisfactory level, or no opportunity. Validation of the tool will consist of both reliability and validity testing. **Results:** The assessment tool was found to be sufficiently flexible to be used in four schools of pharmacy. Data regarding validation is still being collected. **Implications:** The assessment tool administered through E*Value software provides extensive access to anyone using the program. Use of this assessment tool requires preceptor training to maximize its utility. Future efforts will focus on examining appropriate use of the tool by the preceptors, effectiveness of training and appropriateness of skill statements and definitions.

**Development and Implementation of a Standardized Patient Exercise to Promote Interprofessional Learning.** Lisa Kroon, University of California, San Francisco, Maria Wamsley, University of California, San Francisco, School of Medicine. **Objectives:** To develop and implement an interprofessional standardized patient experience (ISPE) for students from the schools of medicine, nursing, pharmacy, physical therapy, and dentistry to 1) enhance student ability to collaborate and communicate in an interprofessional team and 2) increase student knowledge about healthcare professionals’ roles in caring for a patient with chronic illness. **Method:** Investigators created the case of “Paul Harris,” a standardized patient (SP) with complex chronic medical conditions. The case was carefully constructed to include aspects applicable to all health professions. Students in their third professional year are assigned to an interprofessional team and individually interview the SP while other team members observe. After the encounters, the team meets to develop a care plan. In a faculty-led debriefing session, students reflect on the interprofessional experience. **Results:** Approximately 24 students from each school will participate from January to April 2010. Evaluation will examine changes in student attitudes towards interprofessional teams, perceived learning outcomes from students and faculty and student satisfaction using focus groups. Students will also receive feedback from the SP around their communication skills. **Implications:** The importance of interprofessional education in the health professions has been recognized on the national and international level. Evidence suggests that interprofessional education is well-received by learners and enables them to acquire the knowledge and skills necessary for working collaboratively. Examples of ISPEs are lacking. This ISPE is a formative assessment that promotes interprofessional learning in a simulated authentic setting. Interprofessional faculty and student input in case development and planning is critical for successful implementation.
Development of a Pharmaceutical and Biotechnology Industry Mentorship Program for Pharmacy Students. Williams Etouati, University of California, San Diego, Joseph D. Ma, University of California, San Diego. Objectives: A mentorship program was developed for pharmacy students (Year 1 to 4) where the desired outcome of the program was to increase student knowledge of career opportunities in the pharmaceutical and biotechnology industry. Method: Preliminary meetings were conducted with students to determine program interest. Potential mentors with a Pharm.D. and/or Ph.D degree, self-identified area of expertise, and currently employed at a pharmaceutical or biotechnology company were contacted. Mentors and students then met to discuss student and mentor goals and objectives, expectations, program logistics, and potential student-mentor activities. A general expectation of the mentor is to be readily available to students to discuss career paths and work experiences. Students were assigned to mentors based on student interest and the mentor’s area of expertise. Results: Forty students have expressed interest. Nineteen individuals currently employed at Pfizer, Novartis, Amgen, Amylin, Johnson & Johnson, and other companies have volunteered their time to be mentors. Mentors have expertise in drug discovery, clinical development, regulatory affairs, new product planning, drug information, data management, pharmacoeconomics, and marketing. Fifteen students (one in 1st year, four in 2nd year, nine in 3rd year and one in 4th year) have been assigned a mentor. Student and mentor goals and objectives, expectations, program logistics, and program evaluation will be highlighted. Implications: The mentorship program encourages career development, promotes networking opportunities between students and mentors, and increases student knowledge of career opportunities in the pharmaceutical and biotechnology industry.

Development of a Remediation Process for Advanced Pharmacy Practice Experiences. Carla J. See, West Virginia University; Elizabeth J. Scharman, West Virginia University. Objectives: To develop a remediation process based on the APPE competency-based student assessment form. This form allows students to successfully improve performance without repeating a rotation. Method: A competency-based evaluation form was developed for APPE rotations. The competency categories include professionalism, communication, pharmacy knowledge, patient care, drug information/evidence-based pharmacy practice, and pharmacy systems and population-based care/public health. Individual criteria (elements) are provided for each competency to aid preceptors in selecting the appropriate score on the 5-point likert scale. Results: Students receive an overall average score of 3 or greater to receive a grade of “satisfactory.” If the student passes the rotation but receives less than a 3 on any individual competency or element, he/she must complete an individualized action-plan to remediate that competency/element. The action-plan is designed by the Director of APPE in consultation with the preceptor and the Co-Chair of the Experiential Learning Committee. Results: Since the 2007-2008 experiential year, seven students have been assigned a remediation action-plan. Five students have successfully completed their remediation plan without having to repeat a rotation and two students are on track for successful completion. Implications: The Office of Experiential Learning feels this is an appropriate method of detecting and addressing learning and professionalism deficiencies. Preceptors are more willing to assign a score less than three when they know they will not be responsible for failing a student for the entire rotation. Therefore, the remediation plan is an opportunity to obtain more accurate evaluations and improve student performance.

Development of an Advanced Pharmacy Practice Experience (APPE) in a Home Care Medication Therapy Management Practice. Shannon L. Reidt, University of Minnesota. Objectives: The University of Minnesota College of Pharmacy and the Minnesota Visiting Nurse Agency (MVNA), a non-profit home care agency, collaborated to develop a medication therapy management (MTM) practice where a pharmacist visits patients in their homes to provide MTM. An Advanced Pharmacy Practice Experience (APPE) was developed at this practice site to provide a unique learning experience for students and to expand the impact of a pharmacist’s role within a home care agency. Method: An APPE was created that integrated students into the MTM practice model at MVNA. APPE student responsibilities include: scheduling home visits, conducting home visits, coordinating all follow up care, and documenting all MTM services. All patient care activities are precepted by the faculty pharmacist. Students are also responsible for answering drug information questions for nurses, creating patient education materials, and publishing a pharmacy newsletter for MVNA staff. Results: Nine students will have completed the APPE by May 2010. Results from their evaluations will be presented. Implications: Providing MTM to patients in their homes has been a beneficial experience for students. They have had unique opportunities to improve their clinical, communication, and practice management skills. The pharmacist has had a greater impact within the home care agency since integrating the student into the MTM practice and engaging him or her in indirect patient care activities.

Difference in Attitudes and Readiness for Interprofessional Learning between Student Pharmacists and Student Nurses. Natalie Brooks, St. Louis College of Pharmacy; Gloria Grice, St. Louis College of Pharmacy. Objectives: While our students have been exposed to interprofessional activities previously, their attitudes and perceptions towards interprofessional learning (specifically with nursing) have not been evaluated. The primary outcome of this study is the difference between student pharmacist and nurse attitudes and readiness for interprofessional learning. Method: Approximately one hundred thirty 3rd professional year student pharmacists at the St. Louis College of Pharmacy were randomly paired with Goldfarb School of Nursing students to complete eight hours of interprofessional experiences. We used the ‘Readiness of health care students for Interprofessional Learning’ (RIPLS) scale, a 19-item likert scale questionnaire, to assess categories of teamwork and collaboration, professional identity, and professional roles. Student pharmacists and nurses were asked to complete this questionnaire prior to their first interprofessional experience and again after completing their final experience. Results: Data collection is in progress. We will use descriptive analysis to report the questionnaire results. The students will be used to evaluate the overall difference between the two independent groups, difference between groups based on RIPLS category (teamwork and collaboration, professional identity, and professional roles), as well as the difference of pre- and post-intervention. Implications: With interprofessional education programs developing rapidly among all healthcare curriculums, these data can contribute to the limited evidence of how student pharmacists and nurses view interprofessional education before and after an actual experience. The results will also be used to improve interprofessional experiences offered at the St. Louis College of Pharmacy.

Effects of Guided Web 2.0 Interactions on Development of Culturally-Competent Pharmacy Care Skills. Darren Roesch, Texas A&M Health Science Center; Beverly A. Talluto, Texas A&M Health Science Center; Elaine L. Derns, Texas A&M Health Science Center.
**Objectives:** Participation in community service projects is often required for mastery of culturally competent values and attitudes in pharmacy education. The objective of this study was to determine if guided peer-to-peer interactions using a Web 2.0 tool for online social networking—Ning—enhanced attainment of culturally competent values and attitudes, and if so, how.

**Method:** An elective course was designed for pharmacy students to deliver an 11-week drug abuse prevention program (Project ALERT) to local seventh graders. Before program delivery, student’s cultural values and attitudes were self-assessed using the instrument “Promoting Cultural Diversity and Cultural Competency” (PCDCC). During program delivery, students will interact with each other in Ning using blog posts, forum discussions, videos, photos, and real-time chats. Interactions will be guided by the instructor using the Community Inquiry Framework (CIF), a model for creating and sustaining learning through online reflection and discourse. At the end of the course, the students will self-assess using PCDCC. A focus group interview will assess the students’ perceptions of how the guided peer-to-peer interactions in Ning enhanced their skills.

**Results:** The pre- and post-project self-assessments will be analyzed for perceived change in culturally competent values and attitudes. Content analyses of the focus group interview and student reflections on the Ning site will be conducted for evidence and nature of the role of CIF-guided peer-to-peer social network interactions in the development of culturally competent patient care skills.

**Implications:** CIF-guided peer-to-peer interactions using Internet social media may facilitate attainment of culturally competent values and attitudes in patient care.

**Enhancing Community Pharmacy Practice and Research Opportunities: Use of the Well-TIP Method.** Jeanine Abrons, Albany College of Pharmacy and Health Sciences, Terrence T. Towers, Albany College of Pharmacy and Health Sciences, Shannon M. Miller, Albany College of Pharmacy and Health Sciences, Tanya A. Vadala, Albany College of Pharmacy and Health Sciences, Jennifer Cerulli, Albany College of Pharmacy and Health Sciences.

**Objectives:** Although Community Pharmacy Advanced Pharmacy Practice Experiences (CPAPPE) provide students with a unique setting to practice mastery of curricular outcomes, challenges include adjunct preceptor development of structured learning opportunities and faculty engagement in practice-based research. Wellness target intervention programs (WellTIP) were developed for a CPAPPE network to 1) create student patient-centered care and public health learning opportunities 2) enhance research opportunities, and 3) increase patient care activities to promote knowledge of pharmacy services.

**Method:** Community faculty rotated serving as WellTIP Coordinator/primary investigator. Responsibilities included: defining project objectives/outcomes, IRB approval, developing student and patient educational materials, creating patient surveys and data collection tools, student orientation, and serving as lead author. Patient encounters included education and administration of pre and post education surveys. Program outcomes assessed included patient surveys and a 9 question student survey to gather feedback on orientation, program structure, patient receptivity, and learning opportunity enhancements.

**Results:** WellTIP programs yielded 242 medication disposal patient encounters and 215 H1N1 vaccination encounters resulting in 1 publication and 1 abstract. Medication education, smoking cessation and cardiovascular disease WellTIPS are underway. Patient surveys indicate receptivity to programs. Preliminary analysis indicates the majority of students felt WellTIPS increased the likelihood of patient counseling, enhanced learning opportunities and increased their confidence. Limitations included obtaining IRB approval, ensuring preceptor communication, and timeline coordination.

**Implications:** This project demonstrated how faculty can utilize a CPAPPE network to enhance student learning opportunities, improve patient wellness, promote pharmacy and enable collaborative research endeavors amidst challenges in community pharmacy.

**Expanding Community Pharmacy Practice Through an Elective Advanced Pharmacy Practice Experience.** Terrence T. Towers, Albany College of Pharmacy and Health Sciences, Tanya A. Vadala, Albany College of Pharmacy and Health Sciences, Shannon M. Miller, Albany College of Pharmacy and Health Sciences, Jeanine Abrons, Albany College of Pharmacy and Health Sciences, Jennifer Cerulli, Albany College of Pharmacy and Health Sciences.

**Objectives:** Despite structured preceptor training and a core activities checklist, Community pharmacy advanced pharmacy practice experience (CPAPPE) challenges included: adjunct preceptors struggled creating learning opportunities; students choosing a second CPAPPE was redundant; paucity of regional advanced patient centered care practices. To pilot a CPAPPE II elective and create patient-centered care opportunities in a pharmacy network, faculty facilitators partnered with adjunct preceptors to augment rotations.

**Method:** An augmentation manual defined faculty facilitator, student and preceptor activities. Preceptors were invited to participate based on interest, practice site affiliation and/or geography. Facilitators met students weekly to mentor additional activities such as journal club and patient outreach programs. Preceptors retained responsibility for student evaluations (with input from facilitators). Students and preceptors submitted program evaluations using Likert scales and open ended comments at rotation completion.

**Results:** During 6 modules, 22 students at 14 sites participated in the augmentation program with
positive evaluations. Eighteen students agreed or strongly agreed the facilitator was instrumental in preparing them for the practice of pharmacy. Students felt facilitators and preceptors maintained good communication. All preceptors agreed or strongly agreed that the augmentation model increased patient care programs and student participation in patient care activities at their sites. Lessons learned included that timely communication and consistent structure were essential. **Implications:** The augmentation model enhanced CPAAPPEs by increasing student/patient interaction; strengthening preceptor comfort with expanded patient-centered care activities; and offering new student learning opportunities. The pilot enabled creation of a CPAPE II elective rotation network to expand future regional patient care opportunities.

**Evaluating Professionalism in Distance Education.** Carol A. Motycka, University of Florida, Eleonora R. Bird, University of Florida. **Objectives:** Following the development of the three distance campuses, the College was determined to maintain student professionalism across all four campuses. Evaluation of student professionalism continues to be an ongoing project within our College and a preliminary study comparing professionalism between one distance campus and the home campus was completed. **Method:** In order to maintain student professionalism, each campus developed methodologies which would help attain this goal including the establishment of professional organizations, the hire of practicing pharmacists to facilitate coursework, extending IPPEs at each site, and instituting professional activities such as a coating ceremony. A ten question professionalism survey was administered to APPE preceptors in the Jacksonville area who taught both Gainesville and distance campus students. The survey utilized a likert scale from 1-5 with one correlating to strongly agree and five correlating to strongly disagree. Professionalism traits being surveyed included timeliness of projects, punctuality, dress, willingness to learn, confidentiality, and team interactions. The survey was administered between 2006 and 2007 and then repeated between 2009 and 2010. **Results:** The results from the data from all four years are currently being analyzed. Initial results from 2006 and 2007 show no significant differences among the campuses. **Implications:** With the development of distance learning in the education of pharmacists, the need to maintain professionalism is of great importance. Initial results show that professionalism is being maintained at the distance campuses, however, it is important to develop ongoing professionalism evaluations as the campuses continue to evolve.

**Evaluating the Impact of Rural Rotations on Perceptions of Rural Pharmacy Practice.** Kevin P. Boesen, The University of Arizona, Elizabeth Hall-Lipsy, The University of Arizona, Marion K. Slack, The University of Arizona, John E. Murphy, The University of Arizona, Marie A. Chisholm-Burns, The University of Arizona. **Objectives:** Two College of Pharmacy programs designed to increase interest in rural pharmacy practice, the Rural Health Professions Program (RHPP) and rural Advanced Pharmacy Practice Experiences (APPE), were compared to determine (1) whether RHPP students were more likely to select rural rotation sites during 4th year and (2) whether participation changed students’ attitudes towards rural pharmacy practice measured by pre/post questionnaires. The RHPP places students at the same rural site during three points in their pharmacy education: a four-week summer internship during 2nd year and a six-week rotation scheduled during 3rd year summer and 4th year. The rural APPE places third-year pharmacy students in a rural site for one six-week rotation during summer of 3rd year. **Method:** During 2009, RHPP and rural APPE participants completed pre/post questionnaires addressing their attitudes about rural practice. Additionally, both programs were evaluated by the frequency that participants selected additional rural rotations during their fourth year. **Results:** Analysis from the 2009 questionnaires regarding rural pharmacy practice attitudes suggests that RHPP participants have a more favorable view of rural social opportunities (X2, p<0.05) and rural workplaces (X2, p<0.05) after their rural rotations than the APPE participants. Furthermore, 83% of RHPP participants selected a rural rotation during 4th year, compared to 31% of rural APPE program participants. **Implications:** Students who are exposed to rural sites earlier and more frequently during their pharmacy education, like in the RHPP, may be more likely to seek subsequent rural rotations. Furthermore, more frequent rural exposure is related to more favorable perceptions of rural practice.

**Evaluation of Patient Satisfaction Levels Regarding Point-of-Care Testing in Community Settings.** Laurel L. Andrews, The University of Louisiana at Monroe, Connie L. Smith, The University of Louisiana at Monroe, Lauren S. Olinde, The University of Louisiana at Monroe. **Objectives:** The primary purpose of this project was to evaluate how patients perceive point-of-care testing and processes performed by Pharmacy students. This project also assesses how well patients followed physician referral recommendations given to them. **Method:** Third year pharmacy students were assigned to one of four community locations where they performed blood glucose, cholesterol, and blood pressure screening as part of a service learning project. After all services were completed, participants were given a survey, based on a 5 point Likert scale, to assess patient satisfaction and results. Questions were directed to determine the overall satisfaction with pharmacy services. Patients were referred to their primary care physicians if any obtained test results were determined to be outside of the normal range. Adherence to physician referral recommendations was determined by follow-up phone calls if requested by the patient. IRB approval was obtained prior to beginning the study. **Results:** The results are pending. The data will be analyzed and reported using descriptive statistics. **Implications:** Student pharmacist interactions with patients will ultimately help them to develop into more successful clinicians. The results of this survey will allow us to measure the efforts of our students and to adjust our services to be more beneficial to patients. By evaluating our current efforts, we can better direct ourselves in the future.

**Evaluating of Required Medication Therapy Management Activities in Advanced Community Pharmacy Practice Experiences in Montana.** Katherine S. Hale, The University of Montana. **Objectives:** To evaluate the benefits of a required medication therapy management (MTM) activity within a four-week advanced community pharmacy practice experience. **Method:** Fourth year pharmacy students participating in the required community advanced pharmacy practice experience (APPE) are required to complete a minimum of two comprehensive medication reviews. Students submit recommendations to their preceptor prior to communicating with the provider. At the end of the rotation, students complete a self-assessment tool that evaluates: (1) effectiveness of the activity as a learning exercise; (2) time spent on a single encounter; (3) activity strengths/weakness; (4) changes in their knowledge and skills related to key aspects of performing an MTM encounter, and (5) changes in their ability to assess, identify, communicate, and resolve medication therapy related problems. **Results:** Initial results based on 38 of the 65 projected responses indicate 89% of the students rate the activity as effective to very effective. Most students (82%) spent between 2-8 hours on a single encounter. Students reported statistically significant
improvement in knowledge and skills in performing an MTM encounter and ability to resolve medication related problems. Mean scores before rotation ranged from 2.86 to 3.84, and after rotation 3.33 to 4.2 based on 5-point scales. Strengths of the activity included patient interaction and opportunities to practice medication monitoring. Weaknesses included lack of access to patient medical information and difficulty scheduling face-to-face encounters. **Implications:** Students completing MTM activities within a four-week community pharmacy APPE found the experience to be effective and valuable.

**Evaluation of the value of a pharmacy service publication (PharmBeat) for Patients.** Susan Jacob, *Western University of Health Sciences. Objectives:* According to the Agency for Healthcare Research and Quality (AHRQ) 12% of patients are able to interpret prescription labels correctly. This supports improving pharmacists’ communication skills with patients. To address this need, the VA Loma Linda Pharmacy Service developed a PGY-1 resident program, writing a patient focused disease state and therapy based publication entitled PharmBeat. **Method:** VA Loma Linda patients and past residents were surveyed. Results from patients were analyzed to evaluate their level of satisfaction, understanding and readability of the PharmBeat. Additionally they were asked how the publication can be improved. Resident surveys were evaluated to determine if writing PharmBeat was helpful in improving their communication with patients. **Results:** Preliminary data include 200 completed patient evaluations. Patients reported that the PharmBeats contain helpful information and is easy to understand (n=180). Patients (n=127) also reported that having a pharmacist review the counseling points using the PharmBeat were the most beneficial to their learning. Resident evaluations (n=13) indicated that they agreed or strongly agreed that writing PharmBeat helped them communicate better with patients.” **Implications:** Health literacy studies document an association between low literacy and poor health outcomes. Pharmacists are one of the most accessible health care providers. Utilizing exercises like PharmBeat helps pharmacists improve their ability to communicate with patients. This concept can be used as an additional learning tool to the current pharmacy school communication curriculum leading to improved encounters with patients during experiential education.

**Examining the Impact of Service Learning on Pharmacy Students’ Knowledge of Poisonings, Toxicology, and Professional Development.** James A. Palmieri, *University of the Pacific; Yvette J. Crockett, University of the Pacific; Veronica T. Bandy, University of the Pacific; Kathy Marquardt, California Poison Control System - Sacramento Division. Objectives:* To describe the impact of a service learning activity to educate 3rd grade students about poison prevention on the abilities of pharmacy practice experience students. **Method:** Pharmacy students will be assigned to provide a 30-minute presentation on poison prevention to 3rd graders in their school. Prior to the presentation, pharmacy students will attend a 3-hour training session on the program curriculum and poison prevention. Volunteer pharmacists will also attend the training program and will serve as mentors for the pharmacy students. A 10-question test will be administered to the pharmacy students pre- and post-training to assess their knowledge of poisoning and toxicology. The 3rd grade students will be asked to answer five questions that assess their knowledge of the material presented. Pharmacy students will be asked to complete a questionnaire that describes their past exposure to service learning, and assesses the knowledge, skills and attitude/behavior changes that take place as a result of the experience. Directed self-reflection will also be required of the pharmacy students. Quantitative and qualitative analysis will be used to assess the overall educational impact, including correlations with prior service learning or volunteer activities. Results from 2010 will also be compared to results from a similar program in 2005, where possible. **Results:** The 2005 results indicated that the 3rd graders achieved the learning objectives of the service learning activity and that the experiences were positive for pharmacy students. **Implications:** This follow-up project aims to more fully examine the impact of the activity on pharmacy student development.

**From Simulation to Practice: Integration of Patient Care Lab Skills with Introductory Pharmacy Practice Experiences.** Anne Policastr, *University of Kentucky; Trenika R. Mitchell, University of Kentucky; Melanie N. Mabins, University of Kentucky; Patricia R. Freeman, University of Kentucky. **Objectives:** ACPE Standard 14 states that pharmacy practice experiences must integrate, apply, re-inforce, and advance the knowledge, skills, attitudes, and values developed through the other components of the curriculum. To meet the new standards, introductory pharmacy practice experience (IPPE) courses were developed to reinforce and advance activities conducted in the simulated environment of the patient care lab by translating them into actual direct patient care experiences. **Method:** In the 1st professional year, skills related to self-care recommendation and dispensing are presented to students integrated within a standard patient care process. As part of the patient care process, students develop and document a care plan, defining goals of therapy, a plan for patient follow-up, and provide patient counseling to achieve goals of therapy. Student learning is documented via simulated patient encounters using standard assessment rubrics. IPPE faculty, in collaboration with patient care lab faculty, designed an IPPE activity that directly translated student’s simulated experiences to the care of patients at the IPPE site. Student performance was evaluated by preceptors using the same standard assessment rubric utilized in the lab course. **Results:** Comparisons of student performance in the simulated vs. actual practice environment as well as student perceptions of the value of simulated activities as preparation to provide direct patient care during IPPEs will be presented. **Implications:** Teaching pharmacy practice skills in a simulated environment and then providing opportunity for these experiences to be translated into practice thru integrated IPPE activities may build student confidence in providing direct patient care.

**Household Pharmaceutical Waste Collection Events.** Karl Fiebelkorn, *University at Buffalo, The State University of New York; Kristen Zeitzer, University at Buffalo, The State University of New York; Stephanie Wiegand, University at Buffalo, The State University of New York; Brian Badgley, University at Buffalo, The State University of New York; Gayle A. Brazeau, University at Buffalo, The State University of New York. **Objectives:** Pharmaceutical waste management is a growing public health concern across the country. Currently, the New York State DEC requires all registered pharmacies to post a notice about proper disposal of pharmaceutical waste. The goal of hosting events to collect pharmaceutical waste is four fold: to reduce the likelihood among the elderly of tragic incidences of inappropriate self-medication, to deter teenagers from experimenting at “pharming” parties, to keep harmful medications out of the hands of young children and to reduce environmental waste. **Method:** A coalition of community agencies, businesses, licensed pharmacists and the University at Buffalo School of Pharmacy ran three events in Western New York over the past year. At each program household non-controlled and controlled medications were dropped off for disposal via car. Controlled substance waste was inventoried and logged.
and all waste was recorded in pounds. Waste was transported to a local energy company certified by the EPA to be incinerated. Anonymous surveys were collected from each vehicle, gathering data on participant demographics, event advertising, reasons for medication disposal and satisfaction with the overall process. Surveys were conducted with participating student pharmacists regarding the importance of community service events and the ease of the program. 

**Results:** Several thousand doses of controlled substances were logged and categorized and several hundred pounds of noncontrolled medications were collected in three such events and destroyed. Early program trends indicate a positive community impact. **Implications:** Such outreach programs facilitate community and student pharmacist education on safe medication disposal practices, positively affecting society and their environment.

**IPPE Students Participate in Hawaii Asthma Friendly Pharmacy Project for Department of Health.** Carolyn SJ Ma, University of Hawaii at Hilo, Gregg Kishaba, Hawaii State Department of Health, Blythe Nett, Hawaii State Department of Health, Dmitry Krupitsky, Hawaii State Department of Health. **Objectives:** Explore the feasibility of utilizing students for administration of Asthma Control Test (ACT), Asthma Action plans and inhaler education. Monitor collection of ACT scores and provide data to the Department of Health Asthma Control Program. Engage community pharmacies in East Hawaii Island to participate in the DOH Asthma Friendly Pharmacy Project. **Method:** PY1 and PY2 students from the University of Hawaii Hilo CoP were trained to administer the ACT to patients in the community and ambulatory care settings. Students were given background information on the ACT and interview training. Students submitted ACT scores along with two additional questions when inhalers were prescribed or dispensed. PY2 students demonstrated proper inhaler technique to patients in clinic. **Results:** Students administered 68 ACT’s over two semesters. The average ACT score was 16.49 (scores < 19 indicate uncontrolled asthma). Nine percent of patients surveyed received an ACT in the past six months. Eleven percent of patients received a previous personal Asthma Action Plan. Challenges faced by the student included short time (four hours) at IPPE sites, sporadic preceptor support due to time constraints, and disruption of workflow to administer the ACT. **Implications:** This initial effort confirms that Pharmacy students can administer ACT’s if given appropriate support and guidance. APPE students will be required to administer ACT surveys, action plans and provide education on correct inhaler technique to patients in order to demonstrate proficiency in their required community rotation.

**Impact of Rotation Experiences on Student Perceptions of Preceptor Quality.** Lucio R. Volino, Rutgers, The State University of New Jersey; Rolee Pathak, Rutgers, The State University of New Jersey; Mei Liu, Rutgers University. **Objectives:** To evaluate the change in student perception regarding the benefit of activities conducted in Pharmacy Communications I and II (PC) courses prior to and while on Advanced Practice Experiential (APE) rotations. **Method:** Third professional year pharmacy students completed paper-based questionnaires consisting of ten questions, immediately prior to beginning their first and last APE rotations. Questionnaires evaluated student perceptions of course design, topics reviewed and the value of course assignments in preparation for rotations and overall professional development. **Results:** Response rate for the pre-rotation assessment was 99% (214/216). The majority of students strongly agreed or agreed that PC provided an accurate reflection of professionalism in healthcare settings (84.1%) and was valuable in overall development (86.9%). Although many students (85%) strongly agreed or agreed that in-class activities, such as patient cases and SOAP notes, were reflective of real-life scenarios, fewer (72.4%) believed that working in small groups for activities would be valuable when communicating with healthcare professionals in the future. Most students strongly agreed or agreed that in-class activities and course assignments were valuable in providing student skills necessary for rotations. This included in-class counseling (88.8%), SOAP note (81.8%), journal club (82.7%), newsletter (59.3%), and new drug presentations (86%). The final rotation assessment will be completed in March 2010. **Implications:** The survey results, prior to rotations, showed the majority of students believed activities in Pharmacy Communications were valuable in preparing students for rotations and overall development. It is believed that first-hand student experiences will affect preconceived expectations and identify areas for future course modification.

**Impact of an Experiential Quality Assurance Process.** Rhonda M. Jones, Creighton University; Maryann Z. Skrabal, Creighton University, Michael S. Monaghan, Creighton University. **Objectives:** Objectives: The Accreditation Council for Pharmacy Education (ACPE) requires that experiential education programs establish quality assurance (QA) procedures to facilitate achievement of stated competencies, provide for feedback, and ensure consistency and interrater reliability in assessment of student performance. Our QA process is designed to continuously improve the quality of our sites, preceptors, and educational experiences, as well as enhance relationships with our practice partners. This report will describe experiential QA criteria and procedures, review data generated, and explain how these data affect site/preceptor quality. **Method:** Methods: Quality criteria were developed for experiential sites and preceptors based on the AAOP Academic-Practice Partnership Initiative Report: Development of a Profile System to Display Exemplary Pharmacy Practice Experiential Sites. These criteria were utilized to develop QA forms and a routine, structured quality improvement process. The formalized QA process was implemented during the 2008 fall semester. All data from QA forms and site visit evaluations were entered into a database using an online form. **Results:** Results: Specific site and preceptor criteria, QA procedures, and evaluation forms will be presented. Outcomes data, including number of sites/preceptors visited, rotation type, practice setting, criteria compliance rate, problems identified, and interventions to address problems will be presented. Descriptive information regarding opportunities, advantages, and challenges of the QA process will also be presented. **Implications:** Implications: Data presented will 1) provide a structured, formalized QA process and corresponding criteria for sites and preceptors, 2) enhance the quality and standardization of experiential education, and 3) assist other schools in developing experiential QA procedures.

**Implementation of a Health System Tracking Approach to Assignment of Advanced Pharmacy Practice Experiences.** Kenneth C. Jackson, Pacific University Oregon; Lindsay M. Christensen, Pacific University Oregon, Rita Barton, Pacific University Oregon. **Objectives:** To develop and implement an approach to student placement on advanced pharmacy practice experiences (APPE) that enhances student learning and maximizes preceptor resources. **Method:** The APPE program at Pacific University consists of a series of six-week long experiential rotations. Of these rotations, four are required and three are elective. Three of the four required rotations (e.g. Institutional, Ambulatory Care, General Internal Medicine) commonly take place in health system settings. In discussion with our health system partners, and after reviewing student feedback from previous years, we have begun implementation of a new health system based
tracking system. This approach will allow students the opportunity to complete these three required experiences within the same health system. **Results:** At the current time we have been able to secure a total of 100 tracked required rotations from 18 different health system partners for the upcoming academic year. Students and preceptors to date have provided significant positive feedback during the placement process. In addition this has resulted in a significant increase in availability compared to previous years. **Implications:** This approach will facilitate improved student learning by decreasing the amount of time necessary to acclimate to different health system settings, as well as provide for exposure to continuity of patient care. This approach will also decrease the amount of time health systems will be required to orient new students to their settings.

**Introduction to Academic Pharmacy: Elective Course to Raise Student Awareness about a Career in Academia.** Anna Ratka, Texas A&M Health Science Center, Elaine L. Dements, Texas A&M Health Science Center. **Objectives:** An impending and growing shortage of pharmacy educators is well documented. Among factors contributing to this problem may be inadequate understanding of a career in academic pharmacy. An attempt was made to raise awareness about the academic career among student pharmacists through an elective course that may serve as a model to other programs. **Method:** Course content included the role of academic pharmacy in higher education; the triumvirate faculty roles in teaching, research, and service; course development; and the value of teacher’s self-knowledge. Various career paths in academic pharmacy were presented. Methods of active learning were employed. **Results:** Learning assessments included instructor evaluation of weekly self-reflections and of group and individual projects; students completed pre- and post-course self-assessments. As the course progressed, instructors observed more insightful self-reflections and richer class discussions; final group presentations were very interactive and engaging. Student self-assessments shifted from mostly “poor” pre-course to “excellent” afterwards. Students indicated they gained a better understanding and appreciation of academic pharmacy, became more encouraged and felt prepared to plan for a career in academia. They recommended this course be taught to all students and even faculty. Student course evaluation scores varied from 4.5 to 4.9 on the 1 to 5 scale. **Implications:** This course started a systematic approach to improving understanding of a career in academia among our students. Based on the encouraging outcomes of this course, an elective APPE rotation on academic pharmacy will be offered to help students develop more advanced knowledge and skills critical for a career in academia.

**Introductory Pharmacy Practice Experience (IPPE) in Parkinson’s Support Groups.** Kristin S. Meyer, Drake University, Nora L. Stelter, Drake University, Charles R. Phillips, Drake University, Denise A. Soltis, Drake University, Kathryn A. Schott, Drake University. **Objectives:** Develop a unique IPPE that gives students the opportunity for direct patient and caregiver interaction that increases patient and caregiver knowledge of Parkinson’s medication therapies. **Method:** Drake CPHS faculty and staff have developed a quality, turnkey education presentation on prescription medications used to treat Parkinson’s disease (PD). Utilizing live and online training sessions, faculty will train Drake student pharmacists to deliver this education program to PD patients and their caregivers at PD support group meetings across the state. Patient and caregiver knowledge will be assessed using a survey tool prior to and after the education presentation and interaction with the student pharmacists. These surveys will capture knowledge of Parkinson’s symptoms, medications and their side effects, as well as where patients and caregivers tend to seek medication information. The research team will also survey the student pharmacists prior to and after the experience to assess student confidence in knowledge of PD, interacting with PD patients, presentation skills and community involvement. IRB approval has been granted and student pre-program survey has been completed. **Results:** Four students will complete the experience in Spring 2010, with expected patient and caregiver participation to be 100. Results will be presented for students, patients, and caregivers. Reporting and analysis of all survey results will be presented, including pre and post comparisons and subjective assessments of the experience. **Implications:** This unique community partnership provides another successful model for IPPES and introduces possibilities of expansion of pharmacist involvement into other disease state support groups.

**Involving Pharmacy Students in Journal Clubs through Pharmacy Practice Residents as Facilitators.** Jennifer L. Rodis, The Ohio State University, Christine C. Murphy, The Ohio State University. **Objectives:** 1) Engage third-year pharmacy students in journal club as part of Introductory Pharmacy Practice Experience to enhance verbal communication and literature evaluation skills. 2) Provide teaching opportunities for Pharmacy Practice Residents. **Method:** Pharmacy Practice Residents affiliated with The Ohio State University College of Pharmacy, The OSU Medical Center, and local hospital systems are recruited and trained at beginning of academic year through a teaching workshop involving strategies for providing effective feedback. Residents receive additional training on activity logistics and refresher on clinical literature assessment prior to being assigned four, third-year pharmacy students. Residents conduct three meetings with students: an orientation, then 2 journal club sessions. Articles for discussion include the journal club activities published by Pharmacist’s Letter. Residents provide formative and summative feedback to students, and students complete surveys at the experience completion to evaluate resident facilitator and indicate perceived improvement of skills and confidence in verbal communication and literature evaluation. **Results:** Seven different residency programs have been represented in this experience. In 2009-2010, 19 residents participated and 124 third-year pharmacy students presented a journal club. All students (n=75) involved in 2008-2009 agreed or strongly agreed (5-point Likert scale) that skills and confidence improved through this experience. Student surveys from 2009-2010 will be presented. **Implications:** This model of utilizing residents to facilitate journal clubs enables pharmacy students to practice presenting journal clubs and receive one-on-one feedback on their communication and literature assessment skills with minimal faculty time. Residents are also provided the opportunity to teach in a small group setting.

**Maximizing the Use of Database Technology for Management of Experiential Education Programs.** T. Lynn Stevenson, Auburn University, Melody C. Sheffield, The University of Georgia, James W. Fetterman, South University, April G. Staton, Auburn University, Elizabeth S. McCullough, Samford University, Lori J. Duke, The University of Georgia, Michael D. Hogue, Samford University, Mindi S. Miller, The University of Georgia. **Objectives:** To identify key database functionality required for experiential education management, documentation of ACPE standards compliance, and scholarship endeavors conducted individually or as a consortium. **Method:** Five of six SPEEC member institutions compiled lists of various database functionalities, data types, and reports from the online databases they routinely use in the management of IPPES and APPEs.
Results: Categories of functionality required include scheduling, evaluation, site/preceptor management, student management, site requirements, and documentation applications related to compliance with ACPE standards. Data types, data links and reports will be presented. Implications: As the market of online experiential education management vendors has changed in the past several years, schools of pharmacy have needed to elicit the database functionality required for program management and scholarship endeavors. SPEEC consortium members are currently in the transition phase between online management vendors. Although schools of pharmacy have individual differences, there are basic functionality, data types and reports common to all programs. The items identified are universally important for the management of the participating SPEEC programs and should offer guidance for other schools and software vendors regarding important functionality and available data for effective management of experiential education programs. Information within the database should be easily extracted to facilitate management of experiential education programs, document compliance with ACPE standards as well as offer opportunities for scholarship. SPEEC has been able to develop common tools within the database to facilitate management of each individual school’s program. Scholarship based on data extracted from a database has led to several posters and publications.

Over-the-Counter Medication Tours: An Innovative Approach to Introductory Pharmacy Practice Experiences. Gina M. Carbonara, West Virginia University, Diana Vinh, West Virginia University, Tara R. Whetsel, West Virginia University. Objectives: (1) Develop, implement, and assess an ambulatory care experience (2) Instruct third professional year (P3) students to transfer didactic knowledge of self-care products to first professional year (P1) students and patients (3) Enhance oral and written communication skills of student pharmacists Method: P3 students are required to take a one semester Nonprescription Medications course, in which they learn the core tenets of self-care and common nonprescription remedies. To reinforce this content, an IPPE activity was created in which the students extend their knowledge from counseling one individual to teaching a group about how to make appropriate self-care decisions. The IPPE activity was an Over-the-Counter (OTC) Medication Tour conducted by teams of 5 to 6 P3 students at a local pharmacy. P3 students lead a group of 8 to 10 P1 students through the nonprescription medication section of the pharmacy. During the Tour, P3 students explained how to navigate the different sections and medication classes and shared important counseling points. Results: Anticipated results will include P1 students’ scores on a pre-test and post-test and reflections provided by P3 students. Implications: In addition to meeting ACPE standards and curricular objectives for IPPE, this experience establishes peer and mentor relationships and prepares student pharmacists for APPE and professional practice.

Pass/Fail vs. Graded Advanced Pharmacy Practice Experiences (APPE): Current Practices and Stakeholder Opinions. KarenBeth H. Bohan, Wilkes University, Michelle Holt-Macey, Wilkes University, Krina Patel, Wilkes University, Dominick P. Trombetta, Wilkes University, Adam Welch, Wilkes University. Objectives: To determine current practices in APPE assessment and evaluate the potential impact a change from graded to pass/fail (P/F) APPE may have on students by seeking the viewpoints of stakeholders in the process. A “pass with honors” (H) option was also considered. Method: Preceptors, experiential directors, and pharmacy students were identified as stakeholders. Residency directors were also included due to potential impact on candidates’ transcripts. Unique surveys were developed for each group and administered electronically in January 2010. Results: A total of 489 respondents included: 40% preceptors and experiential directors, 33% residency affiliates, and 27% P3/P4 students. Assessment of APPE performance with P/F was reported by 33% of experiential directors. Although 1/3 of preceptors weren’t concerned about a change to Pass/Fail or ability to provide quality feedback, 60% worried it would adversely affect student motivation. Half of P3s and P4s stated they would be just as motivated to succeed with P/F/H but 23% and 46% respectively, stated they would put forth less effort. More P3s (59%) than P4s (38%) felt P/F would adequately assess abilities. P4s felt P/F would adversely affect residency application. Although 84% of residency stakeholders stated APPE grades were important, interview performance and references far outranked APPE and overall transcript grades by almost 2 to 1. Implications: Preceptors and students are concerned about the effect a change to P/F assessment of APPE would have on student motivation, effort, and feedback. Although students perceive a negative impact on residency candidacy, this doesn’t appear to be a significant factor for residency directors.

Perceptions of Preparedness for Institutional Pharmacy-Related Activities Based on IPPE: Two Years Of Experience. Marsha N. Gilbreath, Mercer University, Christine M. Klein, Mercer University, Lisa M. Lundquist, Mercer University. Objectives: To determine if students feel prepared to describe and/or participate in activities related to institutional pharmacy practice based on third professional year Institutional Pharmacy Practice Experiences (IPPE). Method: During the third professional year IPPE, students complete a series of four, structured site visits to a local hospital or health system. The site visits incorporate a variety of institutionally-based learning objectives, with activities related to professional relationships, inventory management, medication distribution systems, intravenous admixture preparation, medication verification process, formulary management, medication therapy management, and drug information. At the conclusion of the site visits, students will be asked to voluntarily complete a survey using a 4-point Likert scale to evaluate their preparedness to describe or engage in specified institutional pharmacy-related activities based on their IPPE experience. The survey questions directly correspond to the 13 institutional-based outcomes defined by our curriculum. The survey results will be used to assess the quality of the experience in relationship to preparing our students for IPPE as well as to compare experiences based on type of institution (community vs. teaching hospital). Primary endpoints for this survey study will be students’ perceptions of preparedness for selected institutional pharmacy-related activities after completion of their third professional year IPPE. Secondary endpoints will include (1) student preparedness based upon type of institution and (2) comparison of 2008-2009 and 2009-2010 survey data. Results: To be determined. Implications: To be determined.

Perceptions of Students, Faculty, and Institutional Pharmacists regarding Institutional Advanced Pharmacy Practice Experiences (APPE). Connie L. Smith, The University of Louisiana at Monroe, Laurel L. Andrews, The University of Louisiana at Monroe. Objectives: The primary purpose of this project was to determine students, faculty, and institutional pharmacy preceptors’ opinions and perceptions regarding the percentage of time students enrolled in the institutional APPE should perform dispensing activities versus patient care activities. The secondary objective was to determine which activities these stakeholders felt would be beneficial and feasible in the institutional setting. Method: A 23-question survey was administered to fourth year students, ULm faculty, and institutional
Pharmacy preceptors to determine their beliefs concerning Institutional APPE content. Participants were asked to indicate the extent of agreement or disagreement with each of the 23 items using a 5-point Likert scale. The survey was administered on-line using create survey.com. Results: The survey was administered to 71 students, 23 faculty, and 152 institutional preceptors. The overall survey response rate was 30.49%. Individual response rates for students, faculty, and institutional preceptors were 36.00%, 10.67%, and 53.33%, respectively. Complete survey results are pending and will be reported using descriptive statistics. Implications: Data obtained from this survey as well as information obtained during an institutional pharmacist focus group held during our annual preceptor conference was used to evaluate assignments and activities during the institutional APPE. These changes will be implemented into the Advanced Pharmacy Practice Experiences beginning May 2010.

Pharmacy Mission to American Samoa as Experiential Elective Leads to Grant Funding for APPE. Carolyn SJ Ma, University of Hawaii at Hilo, Ronnie S. Holuby, University of Hawaii at Hilo, Anita E. Ciarleglio, University of Hawaii at Hilo, Daniel Navas, University of Hawaii at Hilo, Robert Estaban, University of Hawaii at Hilo. Objectives: Recruit pre-pharmacy students at American Samoa Community College. Provide continuing education to physicians, nurses and pharmacy technicians. Increase visibility of the pharmacist's role in the hospital and community. Provide pharmacy support to develop inpatient hospital pharmacy services. Method: The Chair for Pharmacy Practice, two faculty members and two PY2 students accompanied a medical mission team and helped to deliver approximately $800,000 worth of medical supplies to Lyndon Baines Johnson Tropical Medicine Hospital in the summer of 2009. Lectures were given on medication safety to nurses and staff, diabetes and hypertension to physicians, and asthma to pharmacy technicians. Students provided brown bag prescription counseling to patients and also provided a talk on the pharmacy profession to 65 American Samoan college students. Results: As a result of this first mission, the Department of Education has provided $60,000 of grant funding to the UIHH CoP for APPE rotations in the US territories of American Samoa, Guam and Saipan beginning in May 2010. Airfare and living stipend will be provided. Students will help the Director of Pharmacy at LBJ Hospital develop inpatient hospital services such as an IV room, medication reconciliation program and clinical pharmacy monitoring services. Hospital, coagulation and community pharmacy rotations will be held in Guam and Saipan. Implications: Students have an opportunity to experience pharmacy development in an underserved American territory. This effort will help with staffing for the pharmacy department and possibly increase the recruitment efforts of U.S. licensed pharmacists.

Poster Presentations in an APPE Experience. Chrystian R. Pereira, University of Minnesota, Andrew S. Bzoweyckyj, University of Minnesota. Objectives: Ambulatory Care and Community Pharmacy APPE students present a clinically relevant topic to clinic staff using a tri-fold poster format. This requirement satisfies the educational needs of students, while also addressing the needs of the clinic to receive new and relevant drug information. Method: Each APPE student prepares a 12-slide PowerPoint presentation printed in color and posted on a tri-fold posterboard. Students present their poster in the clinic’s breakroom for two to three hours. Breakfast is provided for providers and clinic staff. Clinic-wide announcements are made to request attendance. Posters remain posted for one week after the presentation to increase visibility. Results: Over a 5-year period, 25 posters have been presented at Smiley’s Clinic by APPE students. Audiences for the poster presentations have consisted of faculty physicians, resident physicians, nurses, pharmacists, medical students and clinic staff. Topics have consisted of a wide range of themes including updates for new drugs, pharmacotherapy, and policies. Satisfaction surveys of student and clinic staff are pending. Implications: The poster presentations by APPE students have demonstrated to be an effective educational requirement, mainly because it serves as a new and independent educational experience. In many cases this is the only chance a student may have to create/present in this format. The cost and resources needed for a successful presentation are minimal and can be re-used. Finally, the poster presentation format can allow multiple students to present at the same time, thus minimizing the burden of event coordinating for APPE preceptors and allowing for flexibility to accommodate clinic staff schedules.

Preceptor Development Utilizing Statewide Regional Meetings. Christine F. Cox, Southwestern Oklahoma State University, Nina C. Morris, Southwestern Oklahoma State University, Diana Steinle, Southwestern Oklahoma State University, Melynda Ludwick, Southwestern Oklahoma State University. Objectives: (1) To meet the ACPE standards for preceptor support and development by providing education programs for preceptors (2) To educate preceptors regarding development of a standard orientation for students, (3) To raise preceptor awareness and use of available technology for improvement of experiential education rotations. Method: The need to provide additional preceptor development to complement the annual preceptor conference was identified in 2008. The Office of Experiential Education (OEE) developed statewide regional preceptor meetings to meet this need. During the fall of 2009, four regional locations were identified: Tulsa, Oklahoma City, Weatherford and Lawton. Approval and funding were secured from SWOSU COP Dean and the SWOSU Pharmacy Alumni Foundation. The OEE determined that the meetings would be held in the spring of 2010. These dinner meetings included one hour of state approved continuing education (CE) for attendees. The OEE developed a CE program, Using Technology to Improve Experiential Education Rotations for presentation at the meetings. Results: The meetings were held in the spring of 2010. It was estimated that over 50 preceptors would attend. Attendees were surveyed following the meetings to determine if those who attended plan to develop a standard orientation for students or increase their use of technology during experiential education rotations. Implications: Follow up surveys may be needed to determine if the preceptor’s who attended were actually able to implement a standard orientation or increased use of technology. Regional meetings are a way to meet ACPE standards for preceptor support and development.

Preceptor Evaluation and Feedback Regarding a PY1 IPPE Experiential Community Pharmacy Program. Travis E. Sonnett, Washington State University, Jennifer L. Mattoon, Washington State University, Luke E. Rice, Washington State University, Brenda S. Bray, Washington State University, Lisa J. Woodard, Washington State University, Danial E. Baker, Washington State University. Objectives: To determine preceptor perceptions and interpretation of preparation regarding PY1 pharmacy students in a community IPPE setting utilizing assessments of skill and professional feedback. Method: Preceptor evaluations were integrated into an “exceeded, met, or did not meet expectations” format to determine the level of competence of PY1 pharmacy students when evaluated using pharmacy curriculum learning objectives and outcomes. Results: For the summer 2009, 69 students completed the community IPPE curricular activity following their first academic year. For all learning
outcomes, students exceeded preceptor expectations for 33.7% of the submissions, met preceptor expectations for 65.7% of submissions, and failed to meet expectations for 0.6% of submissions. Students received the highest rate of exceeded expectations submissions regarding communications with co-workers and other healthcare professionals, prescription preparation for dispensing in the community setting, and patient assessment and impact of cultural/lifestyle background. Implications: The impact of the IPPE community activity was successful in that 99.4% of all feedback from preceptors at utilized sites reported students meeting or exceeding expectations. The educational components that the students undertake in the PY1 curriculum have been shown to successfully prepare the student for completion of eleven learning objectives and assessment activities in a community setting. Future work will continue to pursue a 100% success rate, and hope to increase the percentage of students exceeding the expectations of community pharmacy-based preceptors.

Rubric-Driven Grade Contracts for Introductory Pharmacy Practice Experience (IPPE) Courses. Douglas A. Meyer, Concordia University Wisconsin, Michael C. Brown, Concordia University Wisconsin, Melissa Theesfeld, Concordia University Wisconsin. Objectives: Concordia University Wisconsin School of Pharmacy developed its inaugural IPPE program for implementation in Fall 2010. Literature describes a variety of course grading models for IPPE, including letter grades, pass/fail (satisfactory/unsatisfactory), and no grade assigned. The experiential team identified goals targeting the best attributes of these grading systems to develop a modified contract grading system for use in IPPEs. Method: Six goals guided the development of the modified contract grading plan for IPPEs: 1) clearly articulate course expectations to students; 2) use rubrics to help preceptors provide accurate, consistent and effective feedback; 3) use rubric anchors that focus assessment on patient outcomes; 4) promote student accountability by correlating student’s rubric ratings to contract expectations; 5) minimize preceptor anxiety with assigning letter grades; 6) maintain consistency in reporting IPPE grades relative to other courses. Results: Faculty developed “A” or “B” contracts that included course expectations and rubrics associated with assessed learning activities. Contracts also included criteria that would result in a breeched contract and a lower course grade. Expectations for both contracts are identical with the exception of a project required in the “A” contract. Students agree to terms and sign the desired contract at the beginning of IPPE. Preceptors evaluate students using rubrics that are correlated to course expectations as defined in the contract. These are used by the course coordinator to assign final letter grades. Implications: Grading contracts are a novel way to assess IPPE student performance. Student and preceptor feedback will be used to guide future experiential education contract grading systems.

Structuring an Interdisciplinary Nutrition Support APPE Rotation to Enhance Services and Improve Interdepartmental Communication. Christopher M. Miller, University of Kentucky, Patricia R. Freeman, University of Kentucky, Leslie Kenney, Norton Healthcare, William P. Allen, Norton Healthcare, Kimberly Cooley, Norton Healthcare, Debbie Eck, Norton Brownsboro Hospital. Objectives: An academic-practice partnership was established in 2007 between the UK COP and Norton Healthcare, Inc. to enhance experiential education and advance pharmacy practice. As part of the partnership, an interdisciplinary APPE rotation focused on parenteral nutrition (PN) support was developed. Implementation of this rotation was expected to: 1) develop student knowledge and skills in providing nutrition support services, 2) improve interdisciplinary communicatons in managing PN patients and 3) advance nutrition support practice at the site. Method: Nutrition support at the site is provided through an interdisciplinary team of pharmacists and dietitians. The rotation is structured to enable the student to develop close working relationships with both the clinical pharmacy staff and dietitians in their daily care activities. Students are assigned activities to help promote a team approach to patient care. Additionally, students identify and implement projects to improve nutrition support practice. A comprehensive pre/post test is used to assess student learning. Results: Pre-post test results indicate that student knowledge and skills relative to providing nutrition support services improve as a result of the rotation. Several projects completed by students have positively impacted nutrition support practice at the site. Student evaluations of the learning experience have been very positive. Results from an ongoing satisfaction survey of pharmacists and dietitians will be presented. Implications: Academic-practice partnerships can enhance experiential education and advance practice as shown through the development of this interdisciplinary nutrition support APPE rotation.

Student and Preceptor Views on Time Utilization During a Community Pharmacy Introductory Pharmacy Practice Experience. Sheila M. Allen, University of Illinois at Chicago, Courtney D. Krueger, University of Illinois at Chicago, Kristen L. Goliak, University of Illinois at Chicago. Objectives: Colleges of pharmacy continually strive to provide quality IPPEs with an adequate number of hours to meet accreditation standards. Recently, changes were made within our IPPE program to increase the number of hours students spend in a community pharmacy setting. However, there is no assurance that the increased quantity of hours provides a quality experience. Students’ utilization of time during these IPPE hours may be an essential measure of a quality experience. A literature search was undertaken to identify the most effective use of students’ time during community IPPE hours, but no relevant literature existed on how specifically these hours should be spent as a marker of a quality experience. The objective of this project is to determine how students spend their time during a community pharmacy IPPE. Method: A 2-page survey was administered to approximately 163 first year pharmacy students and 140 community pharmacy IPPE preceptors to determine their perceptions of how their time was spent during the IPPE and how their time should be spent during this IPPE. Both surveys were administered during the spring 2010 semester. Results: Survey items will be analyzed to determine how students and preceptors perceived time utilization during the IPPE. Differences in preceptor and student perceptions will be evaluated. Implications: Results from this study will provide insight into how to improve community IPPE programs for future students.

Systematic Documentation of Student-Patient Experiences: The “PITT” Form. Deanne L. Hall, University of Pittsburgh, Amy L. Seybert, University of Pittsburgh, Kristine S. Schonder, University of Pittsburgh, Melissa A. McGivney, University of Pittsburgh, Susan J. Skledar, University of Pittsburgh, James J. Pschirer, University of Pittsburgh, Denise L. Howrie, University of Pittsburgh, Michael Keyes, University of Pittsburgh. Objectives: To create and implement a standardized data collection tool for capturing student-patient encounters in direct or simulated patient care settings. Method: Faculty representatives from Curriculum, Experiential Learning, and Curriculum Assessment Committees; clinical practice faculty; P4 students and a database specialist determined key content elements for the tool that could be used progressively across curriculum years by students to document numbers and types of patient...
interactions they experience. The tool was designed to capture consistent, defined patient care activities in an easy to use format applicable in any practice setting. The tool was created to facilitate collection of quantitative data to support tracking student progression toward achievement of curricular outcomes. Results: The PITT (Pharmacist Interaction Tracking Tool) form is designed as a paper “teleform” for direct faxing to a central database. Data domains include: non-identifying patient demographics; encounter type and reason; disease states; drug-related problems; recommendations, counseling or other actions provided; referral to health care practitioners; communication provided; total time, including billable time. Students in all four program years are using the form during the Spring 2010 semester. Student-specific summary reports will be generated for professional portfolio defenses in April. Data will also be pooled and analyzed in relationship to curriculum outcomes at semester conclusion. Implications: The PITT form will provide students, faculty and the School an additional method to collect and use quantitative data to support student learning experiences.

The Amazing Rx: Student Satisfaction with Case Based Application of Clinical Knowledge. Lara Frick, University of Southern Nevada, Ragini Bhakta, University of Southern Nevada, Jacob Frick, University of Southern Nevada. Objectives: This advanced pharmacy experience activity was created to incorporate the knowledge pharmacy students have obtained during their pharmacy curriculum to recommend therapy for a patient case. The activity also features a review of broad pharmacotherapy topics. The primary objective is satisfaction with this active learning process. Method: Advanced experiential students were grouped into teams of two and given a clue regarding a patient. In order to obtain additional clues, students worked as teams to complete pharmacy related tasks in a manner similar to the reality television series, The Amazing Race. Clues consisted of pertinent clinical findings. Once all clues were obtained, each team submitted a care plan with the appropriate treatment to complete the assignment. Finally, all tasks were reviewed and a satisfaction questionnaire was administered. Results: A complete description of the activity will be presented. Results will be assessed qualitatively to determine student satisfaction with this activity. Implications: As students learn in various ways, it is important to incorporate innovative methods to reinforce therapeutic knowledge. If student are satisfied with the activity, it may be possible to incorporate additional activities into the experiential or didactic curriculum.

The Impact of a Collaborative International Advanced Pharmacy Practice Experience (APPE) in Belize. Denise A. Solits, Drake University, June F. Johnson, Drake University, Susan H. Staggs, The University of Iowa, Jeff Hartman, Hillside Health Care International, Curtis A. Johnson, University of Wisconsin-Madison, Mara A. Kieser, University of Wisconsin - Madison. Objectives: To describe and evaluate the impact of a collaborative APPE at Hillside Health Care Center in the Toledo District of Belize. Method: A partnership between Hillside International, Drake University, University of Wisconsin, and University of Iowa was created with the intention of establishing an APPE for student pharmacists at the free clinic based in Eldridge, Belize. A rotation manual and evaluation tool were developed to provide adequate opportunity for student learning and feedback while at the clinic. Students were asked to write reflections on pre-readings and their expectations before the experience, as well as write a post-reflection of the trip. A pre and post survey was developed to measure the impact of completing an APPE in this underserved population. The survey asked confidence in drug use decision-making, monitoring patients, culturally appropriate communication, drug therapy problem recognition, drug distribution, and multi-disciplinary teamwork. The survey also asked students to assess their knowledge of common disease states in Belize, medication formulary at the clinic, barriers to health care, and unmet public health needs. Results: After 14 months of involvement with Hillside, 23 students have participated in the APPE. Survey results show that there has been a positive impact on all areas of knowledge and confidence. Students rate their experience as 84.6% Excellent, 15.4% Good, 0% Fair, and 0% Poor. Implications: Colleges can create partnerships among themselves and with in-country Non-Governmental Organizations (NGOs) to expand the international opportunities for their students. These global opportunities can increase the cultural competence of students and increase awareness of global health concerns.

Use of a Community Based Model for Providing Introductory Pharmacy Practice Experiences (IPPEs). Deanna W. McEwen, The University of Georgia, Kay L. Brooks, The University of Georgia, Lori J. Duke, The University of Georgia, Whitney L. Unterwager, The University of Georgia. Objectives: To describe the development and implementation of a sustainable, community based model utilizing local and statewide partnerships for providing IPPEs to second and third year students. Method: Experiential education faculty developed partnerships at the University, local and state level to provide various student learning opportunities designed to avoid competition with APPE student placements. University and local county partnerships have provided the following types of opportunities: longitudinal patient care, wellness clinics, influenza administration, and patient counseling. University based and statewide partnerships have provided service learning opportunities utilizing pediatric disease state camps, family and consumer science agencies, indigent care clinics, and regional healthcare organizations. Results: From these experiences, students had multiple opportunities to practice an array of skills in diverse populations. The clinical knowledge and skills gained serve as a strong foundation for future practice experiences. Incorporated skills included: patient communication, physical assessment techniques (BP, glucose, cholesterol, BMI), pharmaceutical care plan construction, continuity of care measures, and immunization administration. Mastery of skill development will be documented with use of an end of year OSCE. Reflective essays and presentations were used to document service learning outcomes related to student professional development. Implications: Community based partnerships have created a mutually beneficial method for providing valuable IPPEs that also attain positive community impacts. Additionally, they have furthered our independence from traditional APPE sites. Future growth opportunities have been identified which will expand the populations served and increase immunization opportunities. Beginning Fall 2010, University based activities will be concentrated within a newly constructed campus clinic.

Use of Student Pharmacist Feedback during a Journal Club in an Advanced Practice Experience. Sarah E. Grady, Drake University, CoraLynn B. Trewet, The University of Iowa, Andrew R. Miesner, Drake University. Objectives: As student pharmacists transition from the student to pharmacist role, they are often required to provide feedback to individuals under their supervision. Student pharmacists are not formerly trained in this area and little research has been completed analyzing peer feedback. The purpose of this study is to evaluate the use of peer feedback among student pharmacists during an intercollegiate, multidisciplinary journal club activity. The objectives are to evaluate the effectiveness of peer evaluation in advanced pharmacy practice experiences as a way to promote student growth.
and learning, to assess student perceptions of their ability to provide feedback, to consider the impact of verbal feedback in journal club by peers compared to faculty preceptors, and to gauge the impact of participating in journal club with peers from other colleges of pharmacy and practice specialties. **Method:** Approximately 50 students from two different universities and three practice specialties will participate in the study. Students will receive training on providing constructive feedback in the form of an interactive discussion. Following this training, students will provide written and verbal feedback to their peers after the journal club presentations are complete. Students will then be surveyed during the final week of the rotation regarding this experience. **Results:** Results are forthcoming and will be presented at the meeting. **Implications:** Implications are forthcoming.

**Usefulness and Applicability of a Pharmacy Management Course in Advanced Pharmacy Practice Experience Rotations.** Anne Policastri, University of Kentucky, Jeff J. Cain, University of Kentucky. **Objectives:** At the University of Kentucky College of Pharmacy, the pharmacy management course was re-designed to improve the practicality of the subject matter. This included making the course less theory driven and more application based. This study addresses the desired outcome of the course to increase the usefulness and applicability of the re-designed course to assist students in meeting their practice management competencies in Advanced Pharmacy Practice Experience (APPE) rotations. **Method:** Students having finished the re-designed management course will be surveyed after completion of their APPE rotations to see which topic areas of their pharmacy management course (operations, people, money, traditional goods and services, value-added service, and risks) were most beneficial to them on rotations. The students will be asked if they felt prepared for the practice management assignments and competencies in their APPE course. Preceptors will be surveyed to see if the students that had taken the re-designed management course were better prepared and more engaged in aspects of pharmacy management than previous students. **Results:** The results of the surveys will be discussed within the framework of the re-design. **Implications:** The students’ ability to apply the concepts learned in their pharmacy management course to meet the APPE practice management competencies will provide validation of the re-design of the course. This study will also serve as an aid to further improve the content and design of the pharmacy management course.

**Utilization of IPPE Assessments to Improve Student, Preceptor and Programmatic Outcomes.** Debra A. Copeland, Northeastern University, Anthony P. Armelin, Northeastern University, Robert Blaser, Northeastern University, Christopher White, Northeastern University, Margarita V. DiVall, Northeastern University. **Objectives:** Introductory Pharmacy Practice Experiences (IPPEs) are an integral component of the curriculum. Northeastern University School of Pharmacy (NU-SOP) is a 0-6 program which utilizes the cooperative education model to deliver IPPEs. Students complete three 4-month experiences with at least one in community- and one in institutional-based practice settings. Documenting achievement of IPPE competencies can be a challenge. Additionally, providing timely data analysis to the assessment committee for incorporation into programmatic improvements can appear insurmountable. Here we detail a structure and process, which has assisted the NU-SOP in managing these activities. **Method:** NU-SOP uses a consortium-based IPPE assessment tools. Practice-based student and preceptor evaluations are available through a password protected, internet-based software program (PlacePro®). Students are required to complete three assessments (baseline, midpoint and endpoint) while preceptors complete one assessment (endpoint). Reporting allows students to view all three self-assessments and preceptor assessment. Currently, system administrators can share pooled averages with each student during the reflection process to allow for peer comparison. **Results:** 83% of students completed all three assessments; however, fewer than 50% of preceptors used the online assessment system. Summary statistics will be reported and examples of student and preceptor reports will be illustrated. **Implications:** Utilizing technology can enable documentation of achievement of IPPE competencies for assessment and accreditation purposes. Automating the analysis of data affords the opportunity for rapid review and feedback to all stakeholders. Analysis of competency achievement can enable better connections between IPPEs and the classroom. Low preceptor participation indicates the need for preceptor training.

**Utilizing APPE Students to Assist with Medication Reconciliation and Anticoagulation Requirements in Two Community Hos.** Mindi S. Miller, The University of Georgia. **Objectives:** To show how APPE students from the University of Georgia can assist two large community hospitals in meeting the Joint Commission National Patient Safety Goals for medication reconciliation and anticoagulation while providing a valuable learning experience. **Method:** A total of 8 Atlanta-based APPE students were assigned to complete a medication reconciliation rotation at Piedmont Hospital. These students initially completed an institutional APPE to become familiar with the hospital and patient population. For the 5-week medication reconciliation rotation, students completed a process to determine appropriate medications for approximately 15 inpatients per day. In addition, 9 APPE students completed an anticoagulation rotation at Dekalb Medical Center. These students followed 15-20 patients daily who were receiving heparin, LMWH, fondaparinux, direct thrombin inhibitors, or warfarin. The students ensured proper dosing by monitoring laboratory values, disease states, and drug/food interactions. The students also performed warfarin education. **Results:** For both rotations, students were able to become familiar with Joint Commission goals and safety requirements. They functioned as an integral part of a multidisciplinary team providing pharmaceutical care to patients. All students performed well during these rotations. Grades were excellent across the board. Preceptor evaluations of students were complimentary. **Implications:** Many hospitals have struggled with ways to provide the extra services required by the Joint Commission. University of Georgia College of Pharmacy Experience Program faculty have worked with pharmacy staff at two hospitals to develop programs that provide a learning experience for students while at the same time assist hospitals in meeting patient safety.

**Utilizing Introductory Pharmacy Practice Experience Students to Improve Pertussis Immunization Rates in Mothers of Newborns.** Cheryl L. Clarke, Drake University; Geoffrey C. Wall, Drake University; Denise A. Solita, Drake University. **Objectives:** This project assesses the impact of a second year introductory pharmacy practice experience (IPPE) where students provide discharge counseling regarding CDC recommendations for postpartum pertussis immunization. Analysis will determine if student involvement in this public health intervention meets educational and clinical goals. **Method:** After training, IPPE students provide mothers on a hospital’s obstetric unit verbal and written information about the benefits and risks of pertussis immunization based on CDC guidelines. If eligible, the patient may request immunization prior to discharge. Students document the consultation in the mother’s and infant’s medical records and report immunization requests to the nurse leader who activates a standard order. Students provide consultations 2 hours
daily for a total of 40 hours of IPPE. Educational outcomes will be assessed by the number of IPPE hours completed, number of consultations, student daily activity logs, and student evaluations of the IPPE. Clinical outcomes will be assessed by changes in immunization dispensing rates and outcomes of consultations categorized as immunization requested, declined, previously immunized, or undecided. Results: During the first semester, students completed 129.25 IPPE hours and provided 248 consultations. Student-perceived outcomes were documented as 56% of patients requesting immunization, 22% previously immunized, 11% undecided, and 11% declining. Preliminary data showed a 35% increase in immunization dispensing. Learning objectives were met including enhanced counseling and documentation skills. Implications: This unique IPPE enables students to improve public health while providing direct patient care in an inpatient setting and could serve as a model for IPPE student involvement in discharge counseling.

LIBRARIES/EDUCATIONAL RESOURCES
Completed Research
Assessment of Student Performance in Biopharmaceutics using the TurningPoint Audience Response System. Jason T. McConville, The University of Texas at Austin, Rochelle M. Roberts, The University of Texas at Austin, Thiago C. Carvalho, The University of Texas at Austin. Objectives: This work demonstrates the usefulness of the TurningPoint audience response system for continuous individual student assessment throughout a semester. Method: Students (n=131) in a didactic Biopharmaceutics course, part of a new curriculum offering, were assessed biweekly using the TurningPoint audience response system (ARS) (Turning Technologies, Youngstown, Ohio). Each week consisted of interactive lectures, with an interactive workshop in Biopharmaceutics every other week. On weeks following workshops, students completed a timed ARS quiz with 25-30 questions on prior workshop material. Data were used to construct a histogram of grades, identify areas of learning difficulty, and highlight potential flaws with ARS. Student attendance was also evaluated for lectures/workshops. A questionnaire about the ARS experience was also completed. Results: Biweekly grade histograms demonstrated a desirable grade distribution. Approximately 75% of students attained a “B” or higher each week. Students who earned a “D” or less were contacted for additional guidance (approximately 2%). An ARS log used for each question indicated technical or question construction issues. The correct answer percentage indicated the level of student understanding, or areas that required reiteration. Only 1-2% of students were absent per class. The end-of-semester questionnaire revealed overall acceptance of ARS for assessment purposes. Implications: A convenient method for evaluating students in the Biopharmaceutics course highlighted individual student needs easily, and provided continuous feedback to the instructor. This was seen as an advantage to midterm exams that elicit a much slower instructor response time in such circumstances.

Developing a Community Health Resource Website for the State of Indiana. Annette T. McFarland, Butler University, Carriann E. Richey, Butler University. Objectives: The purpose of this project was to develop a website that would be a reliable, one-stop shop where consumers and health professionals in the state of Indiana could quickly find the information or tools they need to respond to community health needs. Method: A small group of faculty, students, and staff met in the Spring of 2009 to discuss the potential design and content of the website. It was decided that given the current financial times, this website should contain information about affordable health care options. Website content, written by faculty, students, and staff, includes information about prescription assistance, discounted or free health service options, specialty pharmacies, and more. The Community Health Resource website was launched in September 2009. A section titled “Comments Survey” allows users to make suggestions on the website’s usefulness, ease of use, and content. Google analytics is being used to track number of site visits, number of page views, average time spent on website and percentage of new visits. Results: Since the launch of the website, there have been 1251 site visits and 1866 page views, with an average of 42% new visits each month. The majority of site users quickly found the information they needed. The average time spent per page viewed has averaged 100 seconds. Implications: Overall, survey responders were satisfied with the structure and content of the website. Faculty and staff will continually update and add more information to the website, based on the latest health care developments, as well as feedback from users.

Quantitative Measurement of Student Attainment of Sullivan University College of Pharmacy Program-level ABOs. Ajoy Koomer, Sullivan University, Kimberly K. Daugherty, Sullivan University, Hieu T. Tran, Sullivan University, Meghan M. Bodenberg, Sullivan University, Yashwant V. Pathak, Sullivan University. Objectives: SUCOP has developed a standardized program assessment plan using a web based assessment program (WBAP) that assesses students’ progression in achieving program-level outcomes in their 1st professional year. The WBAP allows students and faculty advisors- to document outcome attainment by writing or reviewing reflections, uploading documentation, and ranking their current level of attainment. The objective of this project was to develop a quantitative method for assessing student attainment of outcomes as they advance through our accelerated three year (12Q) curriculum. Method: Level of attainment of ABO’s is based on a set of criteria (beginner=1, intermediate=2 and advanced=3). In order to gauge the level of student attainment of outcomes during their progression through the quarters, outcomes common to any 2 quarters were selected. - Mean rubric ratings allocated by faculty advisors corresponding to each outcome for the entire first professional year class (N=75) were computed. In the final step a one factor ANOVA corresponding to the paired outcomes for the 2 quarters was tabulated using MS excel 2007 software. Results: ANOVA at α=0.05, demonstrated that for most of the shared outcomes in the 2 successive quarters, the improvement in the mean rubric score of each outcome in student populations (N=75) can be attributed to the impact of a single treatment factor like a combination of knowledge, skills and attitude gained through instructional experiences as the students progress through the curriculum. Implications: A quantitative method for assessing students’ attainment of program level ability based outcomes as they advance through the curriculum was validated.

Tracking Performance of Sullivan University College Of Pharmacy Students using Pharmacy Curriculum Outcomes Assessment (PCOA). Ajoy Koomer, Sullivan University, Kimberly K. Daugherty, Sullivan University, Hieu T. Tran, Sullivan University, Meghan M. Bodenberg, Sullivan University. Objectives: SUCOP administered Pharmacy Curriculum Outcome Assessment (PCOA) to Year 1 students as an assessment of effectiveness in the delivery of curriculum content (understanding retention). The assessment is divided into four main categories & thirty five sub-categories. The main categories include Biomedical Sciences (BD), Pharmaceutical Sciences (PS), Clinical Sciences (CS) & Social/Behavioral/Administrative Pharmacy sciences (SAS). In this project SUCOP PY1 students’
aggregate responses in various BD, PS, CS and SAS disciplines have been compared with the national average and a longitudinal analysis has been designed to assess student performance across disciplines. **Method:** The Assessment graded by Rasch item response theory included three scored card indicators: scaled score, % correct % percentile for program year. The Program Assessment Committee (PAC) utilized the individual cumulative examination scores provided by NABP in terms of the three indicators discussed above for comparative analysis. Means, standard errors and bar graphs were generated using MS excel software. **Results:** SUCOP Year1 students performed on par with the national average for other PY1, 2, 3, 4 students. This is a satisfactory result considering that SUCOP students had only completed 3 out of 4 of the PY1 quarters. When looking at the individual disciplines, SUCOP follows the national trend of BD>SAS>PS>CS with the exception that we had at CS>PS. **Implications:** The results indicate that this tool can be used as a tool for faculty to provide constructive feedback on the strengths & weaknesses of the student & to track individuals’ scores from year to year & their individual growth & knowledge retention over time.

**Using a Server Hosted Microsoft Access Database Instrument to Map Curricular Competencies.** Dean Reardon, University of Charleston, Renee R. McCafferty, University of Charleston, Gagan Kaushal, University of Charleston, Krista Capehart, University of Charleston, Mary L. Euler, University of Charleston, Sandra S. Bowles, University of Charleston, Donald Hodges, University of Charleston. **Objectives:** Enable faculty to adequately and easily map course content for the first three years of the pharmacy curriculum to multiple competency sets. **Method:** A Microsoft Access database was developed to enable faculty to map their individual courses to four specific competency sets. The database backend was stored on a SOP faculty drive hosted via an external server enabling multiple faculty to access the database simultaneously. An online video tutorial, guideline training document, a mapping FAQ, and a faculty development workshop was used to train faculty in both the use of the database instrument and the process of curricular mapping. **Results:** Faculty responded positively with respect to their training in the use of the database mapping instrument. Approximately 90% of all pharmacy courses, didactic and experiential, were mapped to four competency sets including, CAPE 2004, NAPLEX Blueprint, UCSOP competencies, and ACPE category competencies. Data for individual competency sets was compiled based on several parameters including course levels (500, 600, 700); clinical and basic science departmental offerings; and didactic, experiential, and integrated course modules. Compiled data was provided to the Academic Affairs Committee for analysis and distribution to faculty. **Implications:** A server hosted database instrument allowed faculty to simultaneously map their courses to four defined competency sets. All mapping data could be analyzed quickly and in a variety of formats using query based language. Future mapping procedures are expected to be enhanced by the inclusion of competency rankings as well as course pedagogy.

**Theoretical Models**

**Broadening Coursework Horizons: Designing Online Courses for Significant Learning.** Martha H. Carle, University of Arkansas for Medical Sciences, David A. Dubriske, University of Arkansas Medical Sciences, Keith A. Freeman, University of Arkansas Medical Sciences, Robin M. Smith, University of Arkansas Medical Sciences, Cindy D. Stowe, University of Arkansas for Medical Sciences. **Objectives:** In an approach for employing course re-design, the Fink model has been utilized to plan, implement, and evaluate the factors influencing adoption of a new learning management system (LMS). The model is based on a systematic planning process that empowers an integrated approach of course design and student engagement to improve the quality of learning. Instructional designers identified the primary components of design: situational factors, learning goals, feedback, assessment, teaching/learning activities, and integration. A multiyear process is ongoing to train faculty, implement a new LMS, and develop a satellite campus. **Method:** Using a backward design (Wiggins, 1998) phase one incorporated the college rewriting Learning Goals and Competencies. Phase two instituted electronic Feedback and Assessment plans. Phase three identified Situational and Teaching/Learning factors for LMS adoption. The primary focus is on the didactic pharmacy curriculum. Faculty and students evaluated the training and implementation of LMS. **Results:** Phase one was completed during the Self Study in 2007. Faculty members participated in both voluntary and mandatory training featuring the LMS and effective practices during the summers of 2008 and 2009. In fall 2009, 35 courses used online components to support traditional curricular delivery. This represents a 51% increase in LMS usage between the Fall semesters 2008 to 2009. **Implications:** The importance of instructional designers and administrative support greatly impacted the rapid adoption. Planning, implementing, and evaluating course designs are vital for successful incorporation of LMS to support a traditional curriculum. This represents the foundation for enhancing significant learning experiences.

**Integrating a Virtual Learning Environment into Faculty Culture.** Martha H. Carle, University of Arkansas for Medical Sciences, Keith A. Freeman, University of Arkansas Medical Sciences, David A. Dubriske, University of Arkansas Medical Sciences, Robin M. Smith, University of Arkansas Medical Sciences, Cindy D. Stowe, University of Arkansas for Medical Sciences. **Objectives:** Although there is little doubt about the value of technology in distance education, systematic integration into faculty culture is sometimes met with apprehension and resistance. Instructional designers and faculty used the Awareness, Relevance, Confidence and Satisfaction (ARCS) model of motivation to facilitate acceptance of a virtual learning environment. A new elearning tool was introduced to the campus featuring audio, video, application sharing and content display with download/mobile capabilities. **Method:** Instructional designers increased awareness of the elearning tool by offering showcases and multiple trainings. Quality benchmarks in course development and delivery processes earmarked relevance. Confidence in the product has been illustrated by administration and department chairs actively supporting the tool. And satisfaction was measured in usages throughout the implementation. Use of the virtual learning environment was a required component of training in the new learning management system and was piloted in 3 classrooms. **Results:** The tool was regarded by faculty as an enhancement to course delivery and lecture capture. The live learning device was utilized in eight remote presentations in an effort to illustrate both synchronous and asynchronous delivery. Archived presentations were used as student study resources. As with most new technologies, adoption has been gradual due to concerns of time, intellectual freedom and copyright. **Implications:** Typical challenges (communication, technology, time, and faculty readiness) in technology adoption were addressed in the ARCS model implementation. The key motivational factor identified for faculty is determining a relative advantage. Faculty members that adopt new technologies recognize the positive changes in teaching and learning processes.
Using Web 2.0 to Create Quality Assurance (QA) Program for Drug Information Practice and Education. Miriam A. Ansong, Sullivan University, Hieu T. Tran, Sullivan University, BC Childress, Sullivan University. Objectives: To Utilize Blogs to create social interactive QA program for DI pharmacists. Method: Drug Information centers (DICs) that respond to clinical questions are charged to implement peer reviewed quality assurance (QA) programs for continuous improvement for their services. This can easily be achieved by fully staffed DICs however, it can be challenging for centers staffed by one person. Drug Information specialists are connected via the DI ListServe. In 2009, the question of interest on the ListServe focused on QA program for such centers. SUCOP DIC QA program was then shared to find interested individuals to form a QA group. The mission of the group was to perform peer assessment on completed clinical requests from such centers. The proposal called for sharing of completed clinical questions via electronic mail for peer assessment followed by teleconferencing for live discussion of assessments. Anticipated potential teleconferencing issues and possible electronic mail delays warranted the need to investigate an alternative approach. A comprehensive literature search was conducted in secondary literature sources and reputable internet sites with limited information on the topic. Web 2.0 applications, online social networks such as blogs, wikis, and Facebook were evaluated for their capabilities. Blogs was chosen to create this QA program. Results: The online social interactive QA program is currently under development and details will be presented at the conference. Implications: The use of this program will maximize the flexibility of peer assessment of clinical requests and ultimately enhance drug information education by encouraging student’s participation on DI request assignment.

Work in Progress

An Analysis of Library Holdings as Compared to the Basic Resources for Pharmaceutical Education List. K. T.L. Vaughan, University of North Carolina at Chapel Hill, Rachel C. Lerner, University of North Carolina at Chapel Hill. Objectives: The Basic Resources for Pharmaceutical Education (BRPE) is a list of titles edited by librarians in the AACP Libraries/Educational Resources Section. Most librarians consider this list to be one of many tools for collection development. Some administrators, however, would like to use the BPRE as a proscriptive tool for evaluating the strength of a particular school’s collections. There is currently no information about how closely different libraries can or should adhere to the BRPE. Method: The online catalogs of libraries for 8-10 schools were analyzed for the extent to which they hold the titles in the BRPE. Librarians were chosen to provide a representative sample of school age, size, geographic location, and independent/university status. Results: Complete results have not been analyzed. Data will be analyzed for number of titles matching exactly and in different editions for both the “first purchase” selections and for the total list of recommended titles. It is expected that large, old schools that are part of a research university will have a higher metric than small, newer, independent schools of pharmacy. Implications: Librarians have argued that the match between a school’s holdings and the BRPE should not be considered to be an indicator of quality in accreditation reviews. This is because, in practice, librarians take school-specific conditions such as research programs and specialties into account when making collection management decisions. This study will provide baseline information about the match between collections and the BRPE for a representative sample of libraries.

Assessing Student Leadership Styles in a Dual Campus Environment. Melissa S. Medina, The University of Oklahoma, Matthew L. Davidson, The University of Oklahoma, Timmellyn M. Buchanan, The University of Oklahoma. Objectives: While studies suggest that pharmacy students exhibit certain personality types more frequently, such as the guardian type from the Keirsey Temperament Sorter (KTS - II), none has focused specifically on pharmacy student leaders. Nor has a correlation been drawn between this personality type and other leadership inventories. This study is important because leadership style is a strong predictor of later managerial success and management is a key aspect in pharmacy careers. Compare president’s Myers-Briggs Type Indicator (MBTI) and KTS-II preferences from each of the 12 student organizations and 4 class officers between campuses at the University of Oklahoma College of Pharmacy. 2. Compare presidents’ Leadership Frames results on both campuses. 3. Correlate the MBTI and KTS-II to predict four different Leadership Frames. Method: Utilizing retrospective data of MBTI and Keirsey student scores collected in previous coursework, all current and past student organization presidents’ types will be recorded. Then approximately 70 P1-P4 students who are presidents of organizations and class presidents will be asked to complete the “Frames Questionnaire” and a demographics survey. Correlations among the 3 inventories will be calculated. Results: Results: Based on pilot data, we hypothesize that the majority of presidents will exhibit a guardian and introverted preference, which will correlate with the structural leadership frame. Implications: Capturing student leadership styles can help students self assess their leadership strengths and weaknesses and further develop their leadership skills, as well as allow advisors and student affairs to tailor student leadership development in a more intentional manner.

Assessment of Pharmacy Students’ Test-taking Motivation in a Low-Stakes PCOA Test Administration. Rhonda A. Waskiewicz, Bernard W. Graham, Wilkes University. Objectives: The research of motivation as a construct in test-taking suggests that as motivation to take a test decreases so do performance and test validity. Furthermore, the relationship between motivation and performance is not related to ability. The Student Opinion Survey (SOS) is a validated measure of student motivation during a testing situation and is particularly helpful in assessing motivation in low-stakes testing. This research project seeks to employ the SOS to determine the level of motivation of P-3 students during the administration of the PCOA as a low-stakes test in order to better understand the utility of the PCOA as a measure of student content knowledge. Method: Seventy P-3 students are randomly assigned to one of 2 groups. Every student receives a sealed letter from the Dean upon signing into the testing situation. The control group’s letter contains factual information related to the PCOA and the experimental groups’ letter contains the same factual information and a brief appeal from the Dean to take the exam seriously. Students complete the 10-item likert-scaled SOS before leaving the testing environment. Results: Experimental and control group PCOA and SOS scores will be analyzed using correlations and t-tests. Implications: Study results are intended to inform how best to use the PCOA as low stakes and improve understanding of individual and aggregate student performance outcomes. Since most SOS validity and reliability studies are with undergraduate students, this study also has potential to expand SOS’s generalizability.

Assessment of Electronic Drug Information Resource Availability in Alabama Pharmacies. Peter J. Hughes, Sanford University, Michael G. Kendrach, Sanford University, Robert H. Schrimsher, Sanford University, Terri M. Wensel, Sanford University, Maisha K. Freeman, Sanford University. Objectives: Survey pharmacies

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Licensed in Alabama to identify available electronic drug information resources. Results will be used to ensure common electronic pharmacy resources are being taught in the curriculum. **Method:** A 10-item survey was sent via US Mail on January 22, 2010 to all Alabama-licensed pharmacy practices as determined by the Alabama Board of Pharmacy (n = 1562). Question types assessed demographics, availability and usage of electronic drug information resources. An incentive ($100 gift card) was offered to one pharmacy that completed and returned the survey. This research was approved by the Samford University IRB. **Results:** At the time of this writing, response rate is 42% (n = 665) and results are being tabulated. Based on a random sample of 200 surveys, most surveys were returned from community/retail pharmacies (70%). The most common electronic resources are Drug Facts and Comparisons (52%), Internet search engines (51%) and Pharmacist’s Letter (35.5%). Access to the Internet is available more than smart phone applications (98% vs. 30%, respectively). Many pharmacies (50%) use online drug information resources to answer drug information questions. Overall, 76% of respondents indicate that electronic resources are used more than paper resources. **Implications:** Electronic resources are common in Alabama-licensed pharmacies and initially appear to be utilized more than print resources. These preliminary results provide insight into which resources should be emphasized in the curriculum. Incorporating commonly used resources will enable students to have the necessary knowledge and skills to complete didactic and experiential courses in addition to being prepared for practice.

**Comparing the Design, Structure, and Delivery Methods of Literature Evaluation Courses Among 3-year Pharmacy Programs.** BC Childress, Sullivan University, Miriam A. Ansong, Sullivan University. **Objectives:** To evaluate how Literature Evaluation courses are being taught among 3-year pharmacy programs. **Method:** The emergence of new pharmacy schools and 3-year accelerated programs was aimed to meet nationwide pharmacist demand. These programs have played significant roles in meeting such demand, but have also created challenges in the sequence, design, and delivery of selected courses; such as Literature Evaluation. In order to evaluate the differences and similarities for this course, comprehensive literature searches were conducted in International Pharmaceutical Abstracts (IPA), Pubmed, and Cochrane Library from inception to February 15, 2010. The Accreditation Council for Pharmacy Education (ACPE) website was consulted to locate three year programs. School websites were researched to view curricula. Colleges without an online curriculum were contacted for a Literature Evaluation syllabus. Individual course coordinators were contacted via email for further information. The intent of this research was to compare design, content, activities, duration, and delivery methods for Literature Evaluation courses in 3-year pharmacy programs. An electronic assessment was developed to survey faculty teaching Literature Evaluation in these programs, solicit their input, share highlights of their respective courses, and suggest areas of improvements. A similar assessment will be sent to Drug Information specialists through the DI Listserv to get their perspectives on standalone versus combined Literature Evaluation courses. **Results:** Data analysis is currently in progress, and results will be presented at the conference. **Implications:** The results will highlight differences among the various programs and provide insights for improving the newly combined Drug Information/Literature Evaluation course at SUkop.

**Demonstrating the Literature Search Process Through Innovative Role Play Instruction for Pharmacy Students.** Jennifer R. Martin, The University of Arizona, Sandra Kramer, The University of Arizona, Marion K. Slack, The University of Arizona. **Objectives:** To demonstrate the search process for obtaining the literature students need for writing a proposal for a research project. **Method:** The course instructor initiated the use of both role play and worksheets in a class for writing a research proposal. During the role play, the instructor assumed the role of a student consulting a librarian in order to gather appropriate literature; the second librarian used the classroom computer to act as the student conducting the search following the instruction. Upon locating a relevant study report, the librarian would discuss how to use the information to locate other resources, such as a randomized controlled trial. The worksheet required students to follow the role play and identify specific items in the search and provide feedback. Follow-up voluntary workshops were offered where the librarians provided individual instruction and searching assistance. **Results:** The class of 90 students is in their third professional year at a state university. Most comments (73%) from the worksheet were positive; specific comments also will be summarized. In the previous year with a standard lecture presentation, 4 students attended the follow-up workshop. After the role play, 24 students attended. Instructors perceived that the role play made search strategies and the thought process explicit as well as modeled collaboration skills. **Implications:** Role play appears to be an effective instructional strategy for demonstrating the literature search process. Additionally, the role play models collaboration between the students and librarians, and students and their project advisors, to effectively retrieve relevant literature for writing their research proposals.

**Enhancement of the PharmD Clinical Laboratory Course through Integration of Experiential Learning Modalities.** Maria Lourdes Ceballos-Coromel, Sullivan University, Ajoy Koomer, Sullivan University, Nancy Nguyen, Sullivan University, Crystal Bishop, Sullivan University, Hieu T. Tran, Sullivan University. **Objectives:** To provide an opportunity for students to learn through active participation. The integration and application of didactic knowledge while performing laboratory testing enhances critical thinking, problem solving and professionalism. The experience promotes positive, informative and a fun learning environment while learning to correlate the significance of laboratory tests and its interpretation for patient care assessment. **Method:** Experiential learning questionnaire compared the randomly paired student testing and the “test” patient testing. Test patient was a group or community service activity. The questions pertain to student’s opinion with regards to the benefits of their experiences to their learning process. Simulated tests were performed for blood typing, cholesterol, urinalysis and pregnancy tests. Strep throat test was done between classmates. Glucometers were used for glucose determination. **Results:** All students completed the pre and post survey. Results show that students prefer “hands on lab” activities. Integration of lab activities created a better understanding of the concepts surrounding most lab tests. Experiential learning was fun and informative. Majority strongly agree that blood sugar testing was a positive learning experience in the lab and as a service activity. The tests were adequate for learning and most strongly agree that experiential learning should be integrated in future classes. **Implications:** Pharmacy education is leaning towards a curriculum based in skill competencies. Avenues to enhance competencies are positive experiences which play a major role in the development of critical thinking skills. Incorporation of experiential learning with functional integration of community service would facilitate better understanding of the total scope of pharmacy practice.

**Faculty Development: A Cohort for Active Learning Using Educational Scholar.** Tamra S. Davis, The University of Oklahoma, Melissa S. Medina, The University of Oklahoma. **Objectives:** Recognizing that faculty development is a process, the University of
Oklahoma College of Pharmacy (OUCOP) offered a cohort for faculty development utilizing the Active Learning Module from Education Scholar. The study objectives were to document the cohort’s use and type of active learning strategies implemented in the classroom compared to baseline, evaluate faculty perceptions about the use of active learning strategies in OUCOP courses, and prioritize recommendations for improvement in the cohort program. This study is important because few studies have documented the use of Education Scholar in pharmacy faculty development. Method: The study was descriptive in nature. COP Faculty volunteered to take part in a faculty development program using Education Scholar, a web-enhanced program available from AACP. As part of their participation, the faculty answered questions about their knowledge of active learning and their confidence in using active learning. The primary investigator utilized a pre- post-survey design. Data were analyzed using qualitative principles. Results: Cohort faculty have indicated that they have implemented active learning strategies into their OUCOP courses and that the changes appear to have been well-received by the students. Complete analysis of data has not been completed at the time of abstract submission, but data will be analyzed before July 1, 2010. Implications: Faculty development is an integral part of any academic program. This study showed using a structured cohort program and an established tool such as Education Scholar can provide a formal framework for faculty development.

Impact of Web Based Technology on Pharmacy Seminar Course.
Heather A. Pace, University of Missouri - Kansas City, Andrew J. Smith, University of Missouri - Kansas City. Objectives: To investigate the impact of integration of web based technology on participation and satisfaction on a pharmacy seminar course. Method: Live synchronous web based technology was employed for a second seminar (webinar) of the course, following traditional presentation to a live audience. Online training was provided to all participants on the use of the technology. A web based survey was administered to all students at the beginning and end of their seminar course. The survey gauged interest in the course, reasons for participation, and course satisfaction. Results: Initial results (pre-technology use) indicate students participate in seminar course to prepare for residency and/or gain presentation experience. Of students choosing not to participate in seminar 50% did so due to the amount of work required for the course; 37% were not interested in formal presentations and 25% were afraid to present in front of a live audience. Forty-one percent of students responded that a webinar component would have positively influenced the decision to participate in the course. Once the webinar component was offered to the students only 7% of respondents considered it an influencing factor for participation in the course. Implications: Utilization of web based technology into the pharmacy seminar course familiarizes students with current information exchange trends and allows for course participation from remote sites. The information from this project will provide investigators and educators insight into the acceptance of technology by both students and faculty and demonstrate areas for improvement and advancement.

Know Your Librarian: An In-Depth Look at Librarians Working in AACP Institutions. Jean A. Waldrop, Harding University. Objectives: To discover and compare the roles and responsibilities, along with the background and qualifications, of librarians working with Colleges of Pharmacy across the nation and items to consider for the future. Method: A survey will be conducted with the 132 institutions that are members of AACP with thirty questions pertaining to the librarians that are directly working with the Pharmacy programs. The survey will be sent out in mid-March asking for results to be back in two weeks time. Results: The data will be analyzed and divided into three main areas. The first area will be the background and qualifications of librarians, asking questions such as the amount of training in library science or undergraduate work. The second area to look at will be the role of the librarian. Is the librarian a contact person or liaison, part-time or full-time, or part of the faculty? The third area will inquire of the responsibilities that the librarian performs. Some examples in this area would be: Do they serve other departments or just Pharmacy, do duties include reference, cataloging, or instruction? Implications: To apply the information gathered to allow librarians, faculty and administrators to understand the possibility of diverse backgrounds and qualifications among librarians working in the field of academic pharmacy and to foster programs and training that will enhance the librarian’s role along with recognizing the various responsibilities and roles that many librarians identify with every day.

Pharmacy Students’ Use of Library and Information Resources. Sean M. Stone, Drake University, Michael Andreski, Drake University. Objectives: To compare library knowledge and usage as well as drug information awareness of pharmacy students before and after their first professional year to determine if use of the library or overall informational knowledge changes. Method: A survey was given to all students at the beginning and end of their first professional year in a PharmD program. The survey focused on students’ perceptions and usage of the physical library, electronic and print resources, and drug information and health sciences resources. Results: Data is still being collected but initial analysis has been made of three years of surveys. Observational data show which resources students use as well as how they utilize various library services and facilities. There is also data on students’ developing knowledge of drug information resources. Statistical analysis shows that there is little to no difference between years as well as between pre and post surveys in the same year. A discussion of the possible reasons for the lack of statistical change is included and may be based on integrated information instruction. Implications: Information literacy is of vital importance for pharmacy students. From the college of pharmacy’s perspective, this data is a measure of students’ information literacy as well as the level of information literacy included in the program. From the library’s perspective, this data can help drive decisions about key resources and the future of facilities given the problem of limited resources.

Promoting Critical Reflection via a Strategy of Ad Deconstruction and Video Annotation. Richard W. Brown, University of Minnesota. Objectives: We are investigating the effectiveness of “video annotation” as a mechanism to promote critical reflection, and to provide students with practice identifying and deconstructing advertisements along several political and cinematic dimensions. We expect to promote a continuing interest to learn more about media literacy. In addition, we expect to increase student awareness of the current issues in the arena of “direct to consumer” (DTC) advertising by the Pharmaceutical industry. Method: Students will read and watch (on-line) educational materials, introducing them to the concept of media literacy with a focus on studies in the health promotion literature. In addition, students will read and watch educational materials in the area of “direct to consumer” (DTC) advertising. Students will, then, view and critique a DTC commercial. In addition to the written critique, they will create an annotated version of the clip using VideoAnt and the rubric. Students will receive private feedback on their critique and annotated video. Results: Students who evaluate the importance of a critical stance towards media marketing highly (via the on-line evaluation), should report both a continued awareness/consciousness
of marketing strategies over time, and value the importance of such a stance over time. **Implications:** Video annotation is a potentially powerful tool to promote active learning, assessment of higher-order thinking skills, and critical reflection. Demonstrating the usefulness of video annotation as a tool to foster reflective analysis on media furthers the pragmatic goal of defining instructional strategies that take advantage of new and evolving technologies.

**The First Year of the E-Portfolio in a Pharm.D. Program.** Rochelle M. Roberts, The University of Texas at Austin. Objectives: This poster will address the program evaluation for the first year of e-portfolio implementation with P1 students in a Pharm.D. program. **Method:** Beginning Summer, 2009, preparations for the e-portfolio included recruiting 25 Faculty Mentors (FM), hiring 13 Advanced Academic Assistants (AAA, P2-P3 students) to serve as Peer Mentors, and training the FMs, AAAs, and 131 P1 students on the use of the e-portfolio. The P1s write six reflective essays within their e-portfolios during this year as part of a new required Professional Development six-semester sequence of courses. For each essay, AAAs provide comments on the first draft, and FMs evaluate a revised draft using a rubric. Additional Spring tasks include choosing an artifact, reviewing another P1’s work, developing one’s resume, and self-assessing outcome achievement. Program evaluation measures include the number of students seeking help, a mid-semester survey, and end-of-semester surveys and focus groups. **Results:** For the first essay during Fall, approximately 27% of the P1 students sought help due to technical difficulties, but by the end of Fall, that percentage dropped to 6% of students. Additionally, data from surveys completed by FMs and P1s, and from focus groups with AAAs indicated positive experiences with the e-portfolios. More data will become available after the completion of the Spring semester. **Implications:** The adjustment to the e-portfolio by the students, AAAs, and FMs, along with the overall positive feedback implies that similar processes should continue next year. However, ongoing program evaluation becomes necessary as tasks become increasingly complex for students as they progress through the curriculum.

**Using synchronous and Asynchronous Instruction to Teach Drug Literature Evaluation Course: Reaching out to Remote Campuses.** Mariana Lapidus, Massachusetts College of Pharmacy and Health Sciences-Boston, Irena Bond, Massachusetts College of Pharmacy and Health Sciences-Boston, Courtney I. Jarvis, Massachusetts College of Pharmacy and Health Sciences-Worcester, Kimberly A. Pesaturo, Massachusetts College of Pharmacy and Health Sciences-Worcester, Maryann Cooper, Massachusetts College of Pharmacy and Health Sciences-Worcester. Objectives: The goal of this study is to assess and compare first-year PharmD students’ learning experience in a Drug Literature Evaluation course team-taught by pharmacy-practice faculty and librarians and delivered via synchronous and asynchronous technologies to an on-site location (Worcester, MA) and to a remote learning site (Manchester, NH). Specifically, the study focuses on the library instruction component of this required course. **Method:** The library instruction component of the course contains 5 didactic and 3 hands-on library instruction sessions. Content is delivered using synchronous (videoconferencing) and asynchronous (Blackboard, e-mail) technologies. Student learning is assessed using a hands-on exercise (for skills) and a multiple choice exam (for knowledge). Students’ grades from both assessment tools will be compared. A 12-question anonymous voluntary survey will be administered to 250 students to assess students’ perception of their learning. Survey questions address the following categories: communication feedback; course material availability, interactivity, and overall course design. The survey will also be administered to 5 co-teaching faculty members. Students’ grades and survey responses will be compared and analyzed by learning site. In addition, faculty and student responses will be compared. **Results:** Data will be analyzed by May 1, 2010. **Implications:** This study will provide comparative evidence of the student learning experiences in a required PharmD course delivered using synchronous and asynchronous technologies to an on-site and remote-site classroom. The study will also provide recommendations for delivering course-integrated library instruction to large classes.

“Bridging the Gap” in PharmD Physical Assessment through Inter-Professional Collaboration. Maria Lourdes Ceballos-Corone, Sullivan University, Ajoy Koomer, Sullivan University, Nancy Nguyen, Sullivan University, James D. Nash, Sullivan University, Ori Heller, Sullivan University, Hieu T. Tran, Sullivan University. Objectives: The study focuses in bridging the gap between medical professionals by promoting inter-professional learning experiences. This collaboration promotes the acquisition of diverse methodologies and techniques in the performance of patient assessment. Increase rapport amongst professionals earns mutual respect and enhancement of the working environment with outcomes of improving patient care. **Method:** The 2 credit-hour course was divided into an hour of didactic with three hours practicum. A skills manual is provided with check off lists of skills taught and learned by the students. The practicum was taught by the MD, PharmD, RN, nursing students and PharmD students. All students rotate to the different fields of expertise for learning and evaluation. A likert scale questionnaire was distributed at the start and end of the quarter. The questions pertain to student’s opinion as to how inter-professional collaboration affects their learning. **Results:** All students completed the questionnaire. Results show that students learn the most with the PharmD, more than expected with the MD, followed by PharmD students, nurses and nursing students. Most students felt confident and competent about performing the skills they have learned. There was a favorable response to continued future collaboration and use of the acquired skills. **Implications:** There is an overall advantage if correct techniques of physical assessment are gained through insights from a diverse group of medical professionals. The acquisition of such skills provides professional edge in this highly competitive profession. The benefits of inter-professional networking allow pharmacists to gather with ease significant clinical data for future therapeutic counseling, referral and treatment.

**PHARMACEUTICS**

Completed Research

Development of an Emergency Formulary for Providing Pharmacy Care at Disaster Sites. Catherine A. White, The University of Georgia, Deborah L. Elder, The University of Georgia, Charles H. McDuffie, The University of Georgia, J. Warren Beach, The University of Georgia, Keith N. Herist, The University of Georgia. Objectives: To evaluate a project in which students developed a 300 item emergency formulary that could be used to set up an emergency pharmacy in a shelter for patients who had been displaced from their homes by a flood. **Method:** Students were randomly divided into 8 teams of 3. Each team prepared a 300 item emergency formulary consisting of prescription medications, OTCs, supplies and monitoring devices. Prescription items were classified using the AHFS pharmacotherapy classification system. Groups needed medications/supplies/monitoring devices for both chronic and acute conditions.
After completing their formularies, groups were informed that due to budgetary issues they would need to delete 75 items from their formularies. Formularies were evaluated by faculty and students performed budgetary issues they would need to delete 75 items from their formularies. After completing their formularies, groups were informed that due to budgetary issues they would need to delete 75 items from their formularies. Formularies were evaluated by faculty and students performed budgetary issues they would need to delete 75 items from their formularies. After completing their formularies, groups were informed that due to budgetary issues they would need to delete 75 items from their formularies. Formularies were evaluated by faculty and students performed budgetary issues they would need to delete 75 items from their formularies. After completing their formularies, groups were informed that due to budgetary issues they would need to delete 75 items from their formularies. Formularies were evaluated by faculty and students performed budgetary issues they would need to delete 75 items from their formularies.

**Results:**

After standardized, fat-rich, and protein-rich meals in four-way cross-over study. Another group of ten volunteers received 500 mg ciprofloxacin with 200 mL water, acidic, and alkaline beverages in three-way crossover study. Reber et al. [2008] found that ciprofloxacin is a class III drug according to the Biopharmaceutics Classification System (BCS). The objective of the study was to investigate the effect of beverages and meal composition on the bioavailability of ciprofloxacin. **Method:** Ten healthy volunteers received 500 mg ciprofloxacin with 200 mL water, acidic, and alkaline beverages in three-way crossover study. After each drug administration, serial plasma samples were obtained and were analyzed for ciprofloxacin by HPLC. **Results:** The average ciprofloxacin AUC were 9.26, 10.6, and 6.99 mg-hr/L when taken with water, alkaline beverage and acidic beverage, respectively. This indicates that the acidic beverage significantly decreased the bioavailability of ciprofloxacin by 25% and 34% compared to water and alkaline beverage. This can be explained by reduction in the dissolution rate of ciprofloxacin due to increased gastric pH. All types of meals delayed the absorption of ciprofloxacin as indicated by the significantly prolonged time to maximum concentration. The average ciprofloxacin AUC were 9.46, 10.3, 8.50, and 5.76 mg-hr/L for the fasting, standardized, protein-rich, and fat-rich meals, respectively. The fat-rich meal significantly reduced ciprofloxacin bioavailability by 38% compared to the fasting state. These results can be attributed to delay gastric emptying, reduced ciprofloxacin dissolution, and possibly inhibition of the absorptive transporters. **Implications:** These findings agree with the expected food effect on class III drugs on BCS and the proposed Biopharmaceutical Drug Disposition Classification System.

**Effect of Food on the Bioavailability of Ciprofloxacin, a Model BCS Class III Drug**, Mohsen A. Hedaya, Kuwait University, Hanaa A. Elghamry, Zagazig University, Sahar M. El-Haggag, Tanta University, Usama A. Fahmy, Zagazig University. **Objectives:** Ciprofloxacin is a class III drug according to the Biopharmaceutics Classification System (BCS). The objective of the study was to investigate the effect of beverages and meal composition on the bioavailability of ciprofloxacin. **Method:** Ten healthy volunteers received 500 mg ciprofloxacin with 200 mL water, acidic, and alkaline beverages in three-way crossover study. After each drug administration, serial plasma samples were obtained and were analyzed for ciprofloxacin by HPLC. **Results:** The average ciprofloxacin AUC were 9.26, 10.6, and 6.99 mg-hr/L when taken with water, alkaline beverage and acidic beverage, respectively. This indicates that the acidic beverage significantly decreased the bioavailability of ciprofloxacin by 25% and 34% compared to water and alkaline beverage. This can be explained by reduction in the dissolution rate of ciprofloxacin due to increased gastric pH. All types of meals delayed the absorption of ciprofloxacin as indicated by the significantly prolonged time to maximum concentration. The average ciprofloxacin AUC were 9.46, 10.3, 8.50, and 5.76 mg-hr/L for the fasting, standardized, protein-rich, and fat-rich meals, respectively. The fat-rich meal significantly reduced ciprofloxacin bioavailability by 38% compared to the fasting state. These results can be attributed to delay gastric emptying, reduced ciprofloxacin dissolution, and possibly inhibition of the absorptive transporters.

**Implications:** These findings agree with the expected food effect on class III drugs on BCS and the proposed Biopharmaceutical Drug Disposition Classification System.

**Evaluation of the Development of Pharmaceutical Biotechnology Elective Course for the Doctor of Pharmacy Program**, Aladin A. Siddig, University of Charleston, Dean Reardon, University of Charleston, Gagan Kaushal, University of Charleston, Dennis K. Flaherty, University of Charleston, Michelle L. Herdman, University of Charleston, Fadi M. Alkhatteeb, University of Charleston, Shawn Jones, University of Charleston, Renee McCaferty, University of Charleston, David A. Latif, University of Charleston. **Objectives:** This course was developed to expose pharmacy students to cutting-edge advances in Pharmaceutical Biotechnology. The major goal was to provide well-integrated, detailed coverage of both the basic science and clinical application of biotechnology-product pharmaceuticals in the Doctor of Pharmacy curriculum. **Method:** Pharmaceutical Biotechnology is a three semester credit hour elective course that is taught during the Fall semester, and is open to second and third year PharmD students. It is structured into three main major sections. An initial basic science section introduces the student to key foundational concepts of technology relevant to protein therapeutics. The second section discusses the various therapeutic classes of biologics. A final section concludes with lectures regarding regulatory, economic and pharmacy practice topics related to biotechnology. **Results:** Course assessment results, student evaluations, and informal verbal feedback from the 18 students in the fall 2009 guided refinements to this elective for the 26 students who took it during the fall of 2010. The mean course evaluation in both 2 years was 4.8 on a Likert scale anchored at Strongly Disagree (1) and Strongly Agree (5). Students demonstrated they mastered the material taught in both years, with 78-89% receiving an A in the course and 11-22% receiving a B. **Implications:** This course reflects significant trends and cutting-edge advances in pharmaceutical biotechnology, including specific therapeutic agents and their applications. The students gained understanding of practical pharmaceutical applications, making this an indispensable knowledge for classroom use as well as for professional reference in pharmacy practice or industry.

**NAPLEX Performance as a Function of Grades in a Pharmacotherapeutics Sequence and Cumulative Grade Point Averages**, Sara E. Renzi, University at Buffalo, The State University of New York, Kristina M. Costanzo, University at Buffalo, The State University of New York, Mark M. Sauberan, University at Buffalo, The State University of New York, Jennifer Hess, University at Buffalo, The State University of New York, Daniel A. Brazeau, University at Buffalo, The State University of New York, Gayle A. Brazeau, University at Buffalo, The State University of New York. **Objectives:** Individual NAPLEX scores from 2008-2009 graduates were compared with their performance in a four course pharmacotherapeutics (PT) sequence, and overall academic performance as measured by the cumulative GPA (cGPA) to identify potential students who may need additional preparation in PT prior to this examination. **Method:** Linear regression between the individual NAPLEX Overall and Area 1 scores as a function of the percentage grade for each PT course (PHM 510-513), combination of these courses and the cGPA at the end of PT1-P4 in the required PharmD courses was conducted using 63 and 53 graduates from 2008 and 2009, respectively. **Results:** While the regression was statistically significant, PT grades and cGPA across all four professional years accounted for very little of the variability (r-squared values ranging from 0.01-0.17) among these parameters and student NAPLEX performance as measured by the Overall score and the Area 1 score. **Implications:** Student scores in the NAPLEX examination seems to be largely independent of their performance in PT and academic performance throughout a PharmD curriculum in this group of students. While NAPLEX evaluates one’s competence to practice pharmacy, factors other than performance in school may be involved in ensuring high scores in this examination format such as the availability of review courses and books and the pre-NAPLEX tool. The limited number of students in this current study or the overall high first time pass rate of students may be limitations in the design of this study.

**Perceptions of Pharmacy Students towards Nanotechnology: Responses to an Elective in Nanotechnology Applications**, Gopal Pillai, Sullivan University, Ajoy Koomer, Sullivan University, Hieu T. Tran, Sullivan University, Yashwant V. Pathak, Sullivan University. **Objectives:** Student perceptions of nanotechnology and their evaluation of an elective course in Nanotechnology. **Method:** An
elective course on nanotechnology and its potential applications in Pharmacy was offered to second year Pharm D students. Nanotechnology is an emerging field promising to revolutionize medicine with significant drug delivery and tissue engineering applications. Future pharmacists need to familiarize with applications of nanotechnology. Responses from students were obtained using 3 questionnaires given in the beginning, mid and end of the course. Total 14 students registered for the 2 credit course. Results: None in the group was exposed to a prior formal class but 78.5% heard about it before either in a conference or in courses in Pharmaceutics (21.5%) and in biotechnology (14%). 71.5% had never heard of applications of nanotechnology but 21.5% did. 71.5% felt knowledge of nanotechnology is required in pharmacy practice. The course met the basic requirement of 57% while 21.5% did not agree. More than 50% agreed to take more courses in nanotechnology. The area in nanotechnology they like most is delivery of anticancer agents (28.5%), drug delivery (21.5%) and 7% in nano-toxicology and nano-carriers. Implications: The nanotechnology courses will have to be part of the Pharmacy curriculum in the coming years.

Pharmaceutics in Motion: Embracing Computer Modeling and Multimedia Presentation in Pharmacy Education. Haian Zheng, Albany College of Pharmacy and Health Sciences, Linh Nguyen, Albany College of Pharmacy and Health Sciences, Xun Gong, Albany College of Pharmacy and Health Sciences, Luciana B. Lopes, Albany College of Pharmacy and Health Sciences, Judy Teng, Albany College of Pharmacy and Health Sciences. Objectives: Multimedia presentations and computer modeling have been used in college education, but not extensively in pharmaceutics due to lack of resources. Computer molecular modeling and schematic animations could be powerful teaching tools in pharmaceutical sciences. In addition, there have been emerging pictures, movies, video clips, and other media on the web with good educational values, although professional guidance, critical review or editing is necessary to ensure the content accuracy and relevancy. New initiatives collectively titled as “Pharmaceutics in Motion” have been systematically incorporated to use multimedia in teaching pharmaceutics, at Albany College of Pharmacy and Health Sciences. Method: Two resources of the materials were used for the classroom teaching: 1) a targeted search on public internet lead to a few multimedia materials which are relevant and scientifically sound for teaching. Faculty and students can access the media through the links; 2) 3D molecular modeling and schematic animations were developed in-house. These materials were categorized into lecture topics and presented in the classroom. A survey was conducted at the end of semester to assess the outcomes. Results: The presentations were popular and well received among the students. They enhanced the learning of key concepts in pharmaceutics. The student’s feedback through survey supported this conclusion. Implications: A combination of internet search and in-house production provide a new set of multimedia materials to teach physical, chemical and biological principles of drug delivery and product preparation. The next stage of the project is underway including an assignment of guided web search, web-based discussion and peer review.

Punch or Tamp – Capsule Compounding in Pharmaceutics Lab Courses. Fang Zhao, St. John Fisher College, Christine R. Birnie, St. John Fisher College, Parag Budulik, St. John Fisher College. Objectives: To incorporate the use of a tamping capsule machine in a pharmaceutics lab course and to compare this method alongside the traditional manual punch method. Method: A simple tamping capsule machine model was selected and added to the pharmaceutics lab unit on capsule compounding. The students were asked to prepare 81 mg aspirin capsules twice during two consecutive lab sessions. The manual punch method was used during week-1. The fill weight was specified, and “Rule-of-Seven” was used to select the capsule size. The individual capsule weight was monitored throughout the compounding process. The capsule machine was used during week-2. The capsule size was specified, but the total fill weight was not. The students used the diluent volume displacement approach to calculate the amount of diluent needed and the final fill weight. Results: Sixty-seven students completed the two lab sessions on capsule compounding. The students also checked the individual weight of the finished capsules with 95 - 105% target weight as the passing criteria. For the punch method, 43 students met the passing criteria for all their capsules. For the capsule machine method, only 5 students did. In a written questionnaire, 67% students preferred the punch method due to accurate weight control, and the rest of the class preferred the machine method because of time efficiency. Implications: This lab unit exposed the students to a simple capsule machine and the relevance of volume displacement calculations. It also allowed the students to compare the two capsule compounding methods and identify potential quality issues.

Stability of Extemporaneously Prepared Midazolam Intranasal Gel. Deborah L. Elder, The University of Georgia, Catherine A. White, The University of Georgia. Objectives: To study the stability of an extemporaneously prepared intranasal gel formulation of Midazolam, which will be used to treat seizures in dogs. Method: An aqueous solution of midazolam 50mg/mL was prepared by dissolving 500 mg of midazolam powder in sterile water for injection containing 0.4% carbopol, pH 2.8-3.0. Five identical formulations were prepared and placed in light resistant glass containers and stored under refrigeration (2-4°C) and at room temperature (22-24°C). Samples were collected from each container at 0, 2, 4, 8, 24, 48 and 72 hours and at 7, 14, and 30 days. After further dilution to an expected concentration of 200µg/mL, the samples were assayed using high-performance liquid chromatographic analysis with UV detection. The internal standard was diazepam. Stability was defined as the retention of at least 90% of the initial concentration. Results: In all samples, at least 90% of the initial concentration of Midazolam remained after the 30 day study period. The mean percentages of the samples remaining on day 30 at room temperature and under refrigeration were 92.89% and 92.95%, respectively. There was no detectable change in color or odor in any sample. However, three of the five refrigerated samples contained a white precipitate that dissolved quickly with slight agitation. Implications: An extemporaneously prepared intranasal gel formulation of midazolam intended to treat seizures in dogs is stable for at least 30 days when stored under refrigeration or at room temperature.

Student Academic Performance in 2004-2010 Graduates as a Function of Pre-Pharmacy Years of College. Kristina M. Costanzo, University at Buffalo, The State University of New York, Sara E. Renzi, University at Buffalo, The State University of New York, Mark M. Sauberan, University at Buffalo, The State University of New York, Jennifer Hess, University at Buffalo, The State University of New York, Daniel A. Brazeau, University at Buffalo, The State University of New York, Gayle A. Brazeau, University at Buffalo, The State University of New York. Objectives: This longitudinal work investigated the academic performance of students in the first three professional years (P1, P2 and P3) who entered the PharmD (PD) program between 2000-2006 graduating in 2004-2010 as a function of their previous years of college with an emphasis of evaluating the effect of increasing the required minimum grade point average (RmGPA) as an admission requirement for students in an early
assurance (EA) two-year program. **Method:** Students (N=763) were classified as early assurance (EA -2 years with a RmGPA ranging from 3.0 for 2000 and 3.3 for 2006), 2 years non-early assurance (2), 3 years or more but no degree (3+) and those with a Bachelor’s degree or higher (BD). The academic performance was evaluated as a function of the cumulative GPA (cGPA) in required P1-P3 courses with statistical differences evaluated using MANOVA. **Results:** There has been a progressive increase in the cGPA in the P1-P3 across all student groups over this time frame. BD students consistently achieved a higher cGPA in the first year compared to EA and other student groups between 2004-2008, with the difference disappearing in 2009 and beyond. It is noted the RmGPA for the EA students ranged between 3.0-3.2 for 2004-2007 and was increased to 3.3 for 2008 and beyond. **Implications:** These findings suggest increasing the required GPA for students in an EA program will minimize differences in academic performance among students with various amounts of previous years in college.

**Theoretical Models**

**Sequenced, Dispersed IPPE Implementation in a New, Block-Formatted Curriculum.** Rajesh Vadlapatla, Saint Joseph College, Bruce Edgren, Saint Joseph College, Dalia Giedrimiene, Saint Joseph College, James G. Hinkel, Saint Joseph College, Joseph R. Ofosu, Saint Joseph College, Bertram A. Nicholas, Saint Joseph College, Blaine T. Smith, Saint Joseph College. **Objectives:** The objective is to thoroughly integrate the IPPEs into our curriculum, dispersing them among Compounding Laboratory, Pharmaceutical Calculations, Drug Information, Pharmaceutical Care Laboratory, Pharmacy Law and Physical Assessment courses throughout the first year of our new accelerated, block-style program. **Method:** To achieve this we designed concurrent offerings of our IPPEs with the above courses—effectively splitting our first year class into four independent groups. This was achieved without compromising either course quality or timely completion of each component, keeping the students lock-step within the first year of our program. **Results:** Students will begin their first of five IPPEs in the week six of class, two more later in the P1 year, and another two during the P2 year. Six factors needed to be addressed: Defining the IPPE experience, Professional communication and buy-in, Site development, Administrative tool selection, Assessment tool selection, and the Analysis Process. We provide our methods for addressing each of these factors, and a qualitative evaluation for addressing the effectiveness. As the program implements we will report on the following parameters: Goal/objective assessment by students, preceptors and IPPE administrators; Mid-course corrections; Success in applying a new pedagogy to a traditionally-experienced preceptor base; Other guiding experiences; case studies. The didactic and experiential questionnaires are prepared, and will be used, beginning in the fall of 2010. **Implications:** The results of this study will be applied to future changes in curriculum sequencing, in order to achieve the optimum learning of first year didactic and experiential (IPPE) educational materials.

**Work in Progress**

**A Comparative Study of Testing Methods in Pharmacy Calculations and Pharmaceutics.** Elizabeth A. Sheaffer, Shenandoah University, Richard T. Addo, Shenandoah University. **Objectives:** Shenandoah University PharmD courses often utilize online testing as a way to prepare students for NAPLEX testing methods. With knowledge of upcoming changes to the calculations component of the NAPLEX—the elimination of multiple-choice options—such changes are being piloted in SU pharmacy calculations and pharmaceutics courses. (1) To introduce PharmD students to upcoming changes in NAPLEX testing methods: the use of constructed-response (versus selected-response) questions pertaining to NAPLEX Competency 2.1.0—Calculations. (2) Level I evaluation: To collect PharmD student feedback on the use of opposing testing methods in a pharmacy calculations and/or pharmaceutics course. (3) Level II evaluation: To measure and compare PharmD student performance on constructed-response and selected-response questions within a pharmacy calculations and/or pharmaceutics course. **Method:** The incorporation of online constructed-response questions was begun during the fall 2009 P1 pharmacy calculations course and typically was limited to one such question type per quiz/exam. Incorporation has continued in the spring 2010 P1 pharmaceutics course. Students also will be presented with an online exam—graded or ungraded—that will include statistically similar questions constructed using both methods—as selected-response and constructed-response. Anonymous feedback will be collected and students’ performance on the exam will be analyzed. **Results:** The level I and II evaluations will be implemented, analyzed, and discussed during the spring 2010 P1 pharmaceutics course. **Implications:** Introducing PharmD students to new online calculations testing methods will better prepare students both for the NAPLEX and for real-world applications. Any significant testing performance differences would warrant changes in teaching methods.

**Active Learning and Engagement of Students in Large Classes with Student Response Technology.** Muhammad D. Hussain, Texas A&M Health Science Center, Mohammad T. Nutan, Texas A&M Health Science Center, Rajat Sethi, Texas A&M Health Science Center, Elaine L. Demps, Texas A&M Health Science Center. **Objectives:** The purpose of this study was to evaluate the impact of student response technology (SRT) on active learning and engagement of pharmacy students in large classes. **Method:** TurningPoint integrated with Microsoft® PowerPoint® was used as a SRT. Students participated in lectures by submitting responses to interactive questions using a hand-held device. Data was collected from real-time student responses. Student learning, understanding and critical thinking in Pharmaceutics, Pharmacokinetics, and Principles of Drug Action were assessed throughout individual lectures by interactive questions. Objectives for each lecture were tied to TurningPoint questions. Students participated and received credits for answering the Turning-Point questions. They were given opportunities to justify their choice of answer. Each objective of the lecture was considered met if more than 70% of student responses were correct. **Results:** Student participation, engagement, attendance, performance and understanding of the courses improved as compared to previous years. Students were more interactive and engaging during lectures. In addition, discussions among students promoted a collaborative learning experience. The instructors were able to assess the objectives of a lecture and get important feedback from the students. Also, student presence in the class was monitored with the TurningPoint and it helped the instructors to follow-up on individual student performance. **Implications:** It was easier for the instructors to assess student learning, meet objectives of lectures, gather data, and enhance presentations with the SRT. Introduction of the SRT increased attendance and participation. SRT may be considered as an effective tool for student engagement and learning in large classes.

**An Analysis Requirement for Compounded Products. Is It Worth It?** Robert P. Shrewsbury, University of North Carolina at Chapel Hill. **Objectives:** Twenty five compounded products are formulated each academic year by approximately five hundred students in the
Folate Receptor Targeted Protoporphyrin IX for Photodynamic Therapy of Cancer. Vipin Saxena, Texas A&M Health Science Center; Muhammad D. Hussain, Texas A&M Health Science Center. Objectives: Photodynamic therapy uses a combination of light, oxygen, and a photo sensitizer to induce the death of malignant cells. There is currently a need to improve selectivity and therapeutic efficacy of photo sensitizers. Our objective was to conjugate Protoporphyrin IX (PpIX) with folic acid (FA) for targeting folate receptors that are over expressed in various cancers. Method: First polyethylene glycol-bisamine (NH2-PEG-NH2) conjugated with folic acid, and then PpIX was conjugated to NH2-PEG-FA. The resultant PpIX-PEG-FA was purified, lyophilized and further characterized by NMR and UV-Vis spectrometry. For the cellular uptake studies 1 x 105 SKOV-3 ovarian cancer cells per well were seeded in 12 well plates 24 h prior to the experiment. The cells were then incubated separately with PpIX-PEG-FA and PpIX solution. After that cells were washed and incubate in 1 mL of media. Fluorescence micrographs of the cells were taken using fluorescent microscope. Results: The fluorescence spectrum of PpIX-PEG-FA conjugate confirmed the synthesis of the conjugate. The peak at 3.5 ppm is attributed to protons of PEG. The small peaks at 6.8, 7.6, 8.6 and 11.4 ppm are the typical protons of folic acid. The characteristic peaks of the PpIX were found at 3.5 ppm, 4.4-4.5 ppm and at 8.5 ppm. Cellular uptake studies indicate that PpIX-PEG-FA conjugate has higher uptake in the cancer cells than PpIX. Implications: PpIX-PEG-FA conjugate has been synthesized and characterized. The conjugate can be considered for targeting of PpIX to various cancer cells which over expresses FA receptors.

Identifying the Presence of New Drug Efflux Transporter (MRP4) in Human Cornea. Pradeep K. Karla, Howard University, Sindhura Motaparthi, Howard University, Opera Omogho, Howard University, Ashim K. Mitra, University of Missouri-Kansas City. Objectives: Majority of the ocular drugs are administered as eye drops. Cornea is well known to be a major barrier for ocular drug absorption. The primary objective of this research is to establish the presence of multi drug resistance associated protein (MRP4), a prominent drug efflux transporter at gene and protein level in human corneal epithelium. Method: Reverse transcription polymerase chain reaction and Immunoprecipitation followed by Western blot analysis were employed to establish the presence of MRP4 at gene and protein level in human cornea. Results: A clear band (277 bp) demonstrating the presence of MRP4 gene in human corneal epithelium was observed. A distinct band (160 kDa) for MRP4 protein was detected by employing a mouse monoclonal antibody. Implications: The results for the first time demonstrated that MRP4 is present in human cornea at gene and protein level. MRP4 is a nucleoside and prostaglandin efflux transporter. As nucleoside drug (Acyclovir) and prostaglandin analogues (Bimatoprost, Latanoprost and Travoprost) are widely employed to treat disease states like ocular herpes and glaucoma this finding can be of high clinical significance. Further research is being performed to delineate the role of MRP4 in glaucoma and herpes drug resistance.

Pharmaceutical Compounding Laboratory Course, Paving the Way to Careers in Compounding Pharmacy. Mohammad T. Nutan, Texas A&M Health Science Center, Muhammad D. Hussain, Texas A&M Health Science Center, Kristopher G. Virga, Texas A&M Health Science Center, Rajat Sethi, Texas A&M Health Science Center. Objectives: Presently, pharmaceutical compounding is a neglected area in the pharmacy profession. Although all Doctor of Pharmacy students get an experience on extemporaneous compounding early in their curriculum, very few choose to pursue compounding as their career. Our objective was to design a more effective Pharmaceutical Compounding course in order to generate student interest towards compounding. Method: Pharmaceutical Compounding is conducted as a one credit hour component of the Pharmaceutics
course in spring semester. Several measures have been taken to make the course more effective. The lab report handouts are made available online in advance. One-hour lab preparation (pre-lab) sessions, separate from the actual lab sessions are conducted to discuss functions of ingredients, calculations, methods of preparation, and stability of the products and explain grading policies. Important compounding techniques are demonstrated at the beginning of each lab session. Lab sessions are directly supervised by the instructors, not the teaching assistants. Course evaluations by the students have been used to obtain preliminary data. A survey of student specific opinions will be conducted. Results: The course as a whole has thus far generated a positive student response. It was indicated that the pre-lab sessions were very helpful. Students were more prepared having the handouts well in advance and could save time in the sessions. They are also impressed to have the instructors help them with their hands-on preparations. Implications: With increased mentoring and structured approach students can have better understanding in pharmaceutics and may find interest in compounding pharmacy as their career.

Quantitative Analysis of Concentration for Solid Samples Utilizing Infrared Spectroscopy. Ehren C. Bucholtz, St. Louis College of Pharmacy, Jaie P. Lavoie, St. Louis College of Pharmacy. Objectives: To develop a rapid analysis of extemporaneously compounded solid mixture products using attenuated total reflectance Fourier-transform infrared spectroscopy (ATR FT-IR). Method: Data acquisition was performed using a Nicolet 380 FT-IR spectrophotometer equipped with Smart Orbit diamond crystal ATR and EZ Omnic v. 7 for Windows. ATR spectra were recorded between 4000 and 650 cm-1 averaging multiple scans (up to 40 per spectrum collected at 2A resolution.) In order to compress the sample against the crystal, the Smart Orbit pressure plate was used with a pressure of 45 psi. Samples of caffeine or acetaminophen in lactose were generated in the range of 10-50% w/w. Results: Preliminary data indicate that while a calibration curve can be obtained for either acetaminophen or caffeine mixtures (up to r2 = 0.99), repeatability is an issue. The most likely suspect is path length as it is directly proportional to absorbance, and we were unable to create identical path lengths of the powder samples. Since the amount of pressure applied relative to the packing efficiency of the mixture also has a determinant role in the path length of the sample as well as sample absorbance, finding a means to apply sufficient pressure and in a precise manner also became an issue when attempting to attain repeatable data. Implications: By developing a rapid analysis of solid mixtures, pharmaceutics labs will be able to improve students’ skills in the process of production and evaluation of extemporaneously compounded solid mixtures.

Retention of Key Pharmacokinetic Concepts Among Preceptors from Institutional and Community Pharmacy Settings. Surajit Dey, University of Southern Nevada, Erik Jorvig, University of Southern Nevada, Renee E. Coffman, University of Southern Nevada. Objectives: The objective of this study is to assess the retention of pharmacokinetic knowledge among preceptors from both the institutional and community setting. This study also assesses the usage and usefulness of pharmacokinetics in their professional activities. This study will also correlate data from an earlier study that looked into retention of pharmacokinetics among pharmacy students. Method: An online survey has been developed which will be administered to preceptors to assess the retention and usage of key pharmacokinetic concepts in their current practice. The survey contains an electronic statement stating the aims and objective of the study assuring preceptor anonymity for the entire process. The survey will be open to preceptors for 30 days. The survey is designed to assess specific areas of pharmacokinetics that have low retention rates amongst students and preceptors and correlate them to the importance of such knowledge in their professional practice. Results: This is a work in progress. Completed surveys will be analyzed and descriptive and inferential statistics will be obtained using the SPSS software. Our prior study of retention of pharmacokinetics in second and third year students has shown that several key concepts were retained more by third year students in comparison to the second year students. Implications: The knowledge of key pharmacokinetic concepts is essential in clinical practice. This study will provide an insight regarding retention and usage of important pharmacokinetic concepts among preceptors. The study will correlate the retention data to that of an earlier study to find any similarities between preceptors and students.

Team-Based Interactive Learning Sessions for Pharmacy Calculations. Thomas J. Cook, Touro College of Pharmacy-New York. Objectives: Evaluate the effectiveness and student perception of team-based interactive learning sessions (TBILS) for pharmacy calculations instruction. Method: Pharmacy calculations is presented via TBILS in an introductory pharmaceutics course to first year students. At each interactive learning session, the topic of the day was concisely presented by the instructor to focus the learning process to the group setting. Students convened in teams of 5-6 students to work on a set of calculations problems. After completion, students reassembled in the lecture hall and the instructor reviewed the problems. The teams were solicited for their answers either manually or via electronic response systems. Common errors were highlighted and reviewed by the instructor. Students completed pre- and post-course assessments of their ability to perform pharmacy calculations and a post-course opinion survey on the use and effectiveness of TBILS. Results: Comparison of pre- and post-course assessments reveals a ~24% average increase in correct answers. Students expressed positive opinions on TBILS. Over 70% agreed or strongly agreed that TBILS was a more interesting and more productive way of learning and that TBILS helped the students master the content. If given an option for future courses, >60% of students expressed a preference for courses with TBILS compared to those without such sessions. Implications: TBILS provides an alternative to lecture based pharmacy calculations instruction. The collaborative learning process that occurs from working in teams may be helpful to students. Incorporating team-based learning techniques can infuse interest into the subject of pharmacy calculations.

The Impact of a Novel Pharmaceutics/Pharmacy Practice “Cross-Over” Assessment on Student Learning and Beliefs. Ira Buckner, Duquesne University, Autumn L. Runyon, Duquesne University, Peter L. Wildfong, Duquesne University. Objectives: The impact of an integrated cross-over assignment on student learning and beliefs, pertaining to the relevance of pharmacuetics in pharmacy practice was evaluated. Method: Instructors from introductory pharmaceutics and pharmacy practice courses created a mock court case in which a medication error resulted in a formulation change, and directly contributed to a patient injury. The assignment involved answering questions relating to the medication errors involved, and how they led to the use of a formulation with an inappropriate tonicity for ophthalmic use. Impact was evaluated by comparing “minute papers” completed before and after the assignment, comparing final exam scores on the relevant topic with scores from the previous year, and Likert-style question directed at student perceptions of impact on learning and beliefs. Results: Preliminary analyses demonstrate that 189 students completed the assessment, earning a mean score of
Use of a Course Management System to Facilitate a Paperless Admissions Process. Laura M. Fox, Presbyterian College. Objectives: To develop a paperless admissions process using a commonly available course management system. Method: Data from PharmAdmit was exported into a database (Microsoft Access) and reports of applicant scores and interview results were generated in portable document format (pdf). These generated reports, PharmCAS and supplemental applications were combined as a pdf portfolio for each applicant. The electronic applicant file was attached to a survey in Blackboard course management system and made available for members of the admission committee to evaluate online before committee meetings. The electronic applicant files were projected onto a screen for committee viewing and discussion during committee meetings. The time required to prepare, review, and evaluate electronic applicant files will be assessed. The satisfaction of admissions committee members with the efficiency of the electronic file format and use of Blackboard for individual review and committee discussion will be measured via a survey. Results: Admissions committee members and administrative staff are tracking the amount of time spent on applicant file preparation, review, and evaluation individually and as a committee. Initial results indicate that the time required for electronic applicant file preparation is similar to the time required for hard-copy file preparation; electronic applicant files required approximately 6 minutes per file to prepare for admissions committee review and 3 minutes per file for committee discussion. Implications: Electronic applicant files are a feasible and environmentally responsible alternative to traditional paper files. Admissions committee review of electronic applicant files can be facilitated by the use of a course management system.

PHARMACY PRACTICE
Completed Research

A Paperless System for Collaborative Grading of Weekly Problem-Based Learning Assignments. Gary D. Theilmann, The University of Mississippi. Objectives: Our 90 students each submit a written treatment plan for the patient in each week’s PBL case. Approximately 2500 documents per year must be critiqued, scored and returned to the student within 4-5 days. We had previously assigned 7-8 documents per week to faculty and asked them to grade the entire assignment. However, students had been critical of variability in scoring by different faculty. Our objective was to decrease variability without increasing turn-around time. Method: A web-based application was developed. Students uploaded their treatment plans each week. We divided each set of plans amongst 6 faculty members who reviewed and scored the same section for everyone. Faculty viewed an image of each de-identified document on the left side of a browser window. A section for entering scores and comments appeared on the right side. Faculty could flip from document-to-document much like flipping through a stack of papers. The application automatically collated comments and scores from different faculty. The students then went online to see all the scores and comments together next to an image of their assignment. Results: Scoring during an 7-week period in 2009 was compared with an analogous period in 2008. The average time faculty spent grading fell by 22%. The number of written comments left increased by 30%. The time needed to return the graded assignments to the students did not increase. Implications: The web application allowed us to improve our grading without sacrificing turn-around time.

An Academic Preparation Program: Statewide Outreach to Residents in South Carolina. Jean M. Nappi, South Carolina College of Pharmacy-MUSC Campus. Objectives: The objective of the South Carolina College of Pharmacy Academician Preparation Program (APP) is to generate interest in an academic career for current residents. Method: Teaching and research activities are part of the MUSC residency program. After reviewing descriptions of teaching certificate programs from other colleges, specific goals and objectives for the APP were created. This program was offered as an option to 2005-2006 MUSC residents and expanded throughout the state over the next two years. Requirements for the APP certificate include attendance at a series of seminars and participation in additional teaching, precepting, facilitating and evaluating activities beyond what was outlined in the MUSC residency program. An abstract and manuscript suitable for submission and peer review are required. Each resident is assigned a full-time faculty member to serve as a mentor for the APP. Residents maintain a teaching portfolio, which includes examples of handouts and copies of evaluations that residents perform on students. Residents meet with their faculty mentor quarterly to review progress toward the APP requirements. Mentors evaluate resident didactic lectures and small group teaching experiences. Results: Residents from Charleston, Columbia, Greenville and Florence participate in the program. As of June 2009, 66 residents completed all the requirements for the certificate and of those 10 accepted full-time academic positions. Many others serve as adjunct faculty or preceptors. Implications: An optional, organized APP is of interest to residents and fosters academic careers.

An Elective to Prepare Pharmacy Students to Design and Implement a Medication Therapy Management Service. Patricia H. Powell, South Carolina College of Pharmacy-USC Campus, Cynthia M. Phillips, South Carolina College of Pharmacy-USC Campus, Tammy Harris, University of South Carolina, S. Bryan Ziegler, South Carolina College of Pharmacy-USC Campus, Kristy L. Brittain, South Carolina College of Pharmacy-MUSC Campus. Objectives: To evaluate the impact of a Medication Therapy Management (MTM) elective on students’ preparedness to design and implement a MTM service. Method: A MTM elective was created that included lectures and active learning assignments to provide students with the skills necessary to develop a successful MTM service. Students enrolled in the MTM elective (SCCP776) were asked to complete a 29-item survey evaluating course objectives and students’ preparedness to implement a MTM service. The survey was administered on the first and last days of class. Student demographics were measured to identify any trends. The main outcomes were measured on a 5-point Likert scale and were evaluated using Fisher’s exact tests. Results: Forty-eight surveys (28 pre-course surveys and 20 post-course surveys) were completed and analyzed. Significantly more students agreed or strongly agreed with all statements assessing course objectives and
Antineoplastics can be a Real Snoozeburger: Using StudyMate as a Tool to Engage Learners. Claire Saadeh, Ferris State University, Stephen Lee, Ferris State University. Objectives: StudyMate is a creative tool which facilitators can create e-learning activities in Flash format. A “challenge” game was developed as a unique active learning strategy for the hematology/oncology module in the third professional (P3) year. The primary goals include re-familiarizing the students with clinical concepts of common antineoplastic agents learned previously and reinforcing prior knowledge with supplementation of new material in an engaging, accelerated learning environment. Method: Prior to class, students were instructed to review required reading materials. Two class sessions were conducted simultaneously (79 and 39 students respectively) in different classrooms, each facilitated by a faculty member providing supplemental clinical information throughout. Students were divided into two teams, taking turns in choosing questions from several categories of differing point values, and were encouraged to discuss the material. Two different “challenge” games were conducted in a two hour class session. An assessment was conducted immediately at the end of class. Results: There were 109 surveys returned. About 60% of students stated that they completed the required pre-work in varying degrees. 78% stated favorably (by answering strongly agreed [SA] or agreed [A]) that this activity was successful in re-familiarizing material learned from previously, 99% stated favorably that there was adequate instructor feedback throughout the session. About 80% stated favorably that the learning format was enjoyable and recommended it to be continued. Implications: This StudyMate “challenge” game was an effective active learning strategy in this module. Further development of StudyMate tools will be explored in this and other modules within the pharmacy curriculum.

Applying a Branched-Outcome Decision Making Model to Virtual Patient Simulations to Enhance Student Learning. Neal J. Benedict, University of Pittsburgh, Kristine S. Schonder, University of Pittsburgh. Objectives: To improve knowledge acquisition by combining didactic lecture with virtual patient (VP) simulations that use a branched-outcome decision making model. Method: Virtual patient simulations were incorporated as a learning supplement in a required therapeutics course. Simulations were designed using a branched-outcome decision model, whereby patient outcomes are dependent on the learner’s decisions. Simulation content was derived from learning objectives developed for course didactic lecture. Formative feedback was provided to address attainment of learning objectives. Students completed a satisfaction survey to evaluate perception of the simulations. Student learning was evaluated by pre- and post-simulation questions, which were repeated on the examination. Results: Survey data for 188 students indicated that the simulations were enjoyable (92%) and easy to use (90%). Simulations stimulated student interest in critically ill patients (82%) and allowed for application of didactic lectures material as well (91%). 142 students completed pre- and post-simulation tests. 77 students (54%) improved on 2 or more of the 5 questions. An additional 39 students (27%) improved on 1 of the 5 questions. On the examination, 110 (78%) of the 142 students answered all 5 questions correctly. Of the 31 students who did not, 29 (94%) answered only 1 question incorrectly. Implications: Virtual patient simulations are effective teaching supplements to improve student learning when combined with didactic lectures. Students enjoyed the virtual patients, which stimulated their motivation to learn. Use of VP simulations may also promote retention of knowledge.

Assessing the Impact of an Introduction to Pharmacotherapy Course on Learning in the Pharmacotherapy Series. Freddy M. Creekmore, East Tennessee State University, Ralph A. Lugo, East Tennessee State University. Objectives: We sought to determine if a 3-hour Introduction to Pharmacotherapy course (IPc), placed in the semester prior to the Pharmacotherapy series, improves student learning and achievement of the programmatic outcomes. Method: The IPc covers all the material in the Pharmacotherapy series, but in less detail. In their third professional year, after completing one semester of the Pharmacotherapy series, we surveyed students who did not take IPc (class of 2010) and those who did take the course (class of 2011). We also surveyed faculty who taught in the first semester of the Pharmacotherapy series. Results: Forty-seven (71%) students in the class of 2010 and 48 (68%) students in the class of 2011 responded. On a 5-point Likert scale, the class of 2011 rated their preparedness for the Pharmacotherapy series significantly higher than did the class of 2010, with median scores of 4 (well prepared) vs. 3 (somewhat prepared), respectively (p=0.01). The median scores of the 4 faculty members ranged from 3.5 to 4.5 on a 5-point Likert scale assessing the impact of the IPc on student achievement of programmatic outcomes. In particular, the faculty thought that the course improved the students’ ability to identify and assess medical problems and improved their critical thinking and problem solving skills. The faculty also felt that the IPc helped prepare the students for the Pharmacotherapy series (median score of 4.5/5). Implications: We believe the IPc facilitated student learning in the Pharmacotherapy series and plan to continue the course for future classes.

Assessing “Check-Tech” Active Learning Exercises within a Professional Pharmacy Practice Laboratory Setting. Candace E. Chelette, The University of Louisiana at Monroe, Scott A. Baggagary, The University of Louisiana at Monroe, Alaina L Bischoff, The University of Louisiana at Monroe. Objectives: In “Check-Tech” exercises, students check filled prescriptions for errors and omissions. The objectives were to determine if students with prior work experience perform better than other students, and to assess the students’ confidence level in identifying prescription errors and omissions. We hypothesized that experienced students would perform better. Method: Participating students completed a consent form and a baseline questionnaire providing information on work experience and estimating their confidence level in performing check-tech tasks. Students were classified as experienced or inexperienced based upon their work experience. Throughout the semester, students identified if prescriptions were filled correctly or if an error was present from four categories: incorrect drug or strength; incorrect patient; incorrect transcription; and doctor omissions. The percentage of correct exercises for each category was compared between groups. At the end of the semester, the students completed a second confidence-level questionnaire and results were compared to baseline levels. Results: Seventy-three
Assessment of Approaches to Addressing American Pharmacy Educator Week. Therese I. Poirier, Southern Illinois University Edwardsville, Kevin Hoffmann, Southern Illinois University, Edwardsville; Angela Stein, Southern Illinois University, Edwardsville, Objectives: To identify ways to enhance students’ appreciation for pharmacy education during American Pharmacy Educator Week. Method: For the 2009 American Pharmacy Educator Week, two P4 students on their elective education Advanced Pharmacy Practice Experience designed and implemented various activities. These included an informational presentation, a faculty panel discussion, a faculty appreciation luncheon, and slides showcasing faculty’s credentials and research interests and also “fun facts” about faculty that were displayed on the electronic signage available throughout the Pharmacy buildings. An online survey was administered to assess the effectiveness of the various activities on students’ interests in pharmacy academia; and suggestions for improvements. Results were analyzed using frequencies and descriptive statistics. Results: 24% of all Pharmacy students responded to the online survey with the highest percentage response from P2 and P1 classes. 68% indicated that faculty profiles on the digital signage enhanced appreciation for the faculty. 60% indicated that digital signage information may be of use to them. Informal social gatherings and shadowing a faculty were events that respondents would like participate in. 69% of P1 and P2 respondents indicated interest in the education concentration. Implications: Highlighting pharmacy academia during a dedicated week provides another avenue to make pharmacy students aware of this as a career option. Other Schools may benefit by being provided ideas for activities for American Pharmacy Educator Week.

Assessment of Aseptic Technique of First Year Professional Pharmacy Students using Webcams. Jeanne E. Frenzel, North Dakota State University, Elizabeth Skoy, North Dakota State University, Heidi Eukel, North Dakota State University, Objectives: To document, assess, and improve student aseptic technique using webcams. Method: First year professional students learn aseptic technique during a series of sterile compounding laboratories. Students were recorded while preparing a low risk compounded sterile preparation within a laminar airflow workbench or biological safety cabinet. Video clips were uploaded to Blackboard and students evaluated the clips using thirteen criteria derived from the sterile compounding grading rubric. Self evaluation and third year professional student peer evaluation of the clips was used to emphasize the importance of good aseptic technique. Results were tabulated and presented to the class the following week to highlight areas needing improvement. Results were also used to establish a relationship between self and peer review and final sterile preparation competency performance. Results: Fifty eight student videos were chosen for review. Of the 58 students, 14 received 20 out of 20 points on their final sterile preparation competency. Awareness of body position during compounding (p < 0.005), prevention of touch contamination (p < 0.033), and use of equipment within the hood were improved as a result of self and peer assessment (p < 0.045). Implications: Use of webcams for self and peer assessment of aseptic technique reinforces the importance of good aseptic technique and results in improved student performance on final sterile preparation competencies.

Assessment of an Interprofessional Communications Course Using Standardized Patients. Rick Hess, East Tennessee State University, Forrest Lang, East Tennessee State University, Susan Grover, East Tennessee State University, Objectives: Measure P2 pharmacy student attitudes regarding interprofessional education experiences in a communications course utilizing standardized patients. Method: 73 P2 pharmacy students enrolled in an interprofessional communications course with 60 first-year medical, 7 PhD psychology and 40 baccalaureate nursing students. The course schedule included self-study modules and bi-weekly participation in small group skills-oriented sessions. Each group included 6-8 students total from the colleges of pharmacy, medicine, psychology and nursing. During these sessions, students practiced learned communications skills by interviewing standardized patients trained to provide scripted responses based on the interviewer’s directed questions. Thirty faculty members from pharmacy, medicine and nursing facilitated the group discussions and graded student performance using an Objective Standardized Clinical Examination (OSCE). Instruction and feedback were provided by faculty as well as group peers. At the course conclusion, all students completed an evaluation (5-point Likert scale) measuring student perception of the course, faculty, and their interprofessional experiences. Student responses were statistically analyzed using Kruskal-Wallis and Dunn’s post hoc test. Results: The majority of pharmacy students reported positive experiences from the course, interaction with interprofessional students and faculty, and believed the course structure should be preserved (mean score range = 3.89 - 4.45). There was no statistically significant difference in responses across all disciplines. Pharmacy students rated highest their interaction with standardized patients and their interaction with students from other disciplines (p=0.037). Implications: The interprofessional environment can provide rich teaching and learning opportunities. Based on the results, pharmacy students enjoyed learning communication skills in this course format.

Assessment of Pharmacy Student Communication Skills Through Rubric Evaluation. Suzanne M. Rabi, University of Illinois at Chicago, Sheila M. Allen, University of Illinois at Chicago, Courtney D. Krueger, University of Illinois at Chicago, Katherine A. Kelley, The Ohio State University, Marieke D. Schoen, University of Illinois at Chicago, Objectives: In 2007, Ohio State University (OSU) produced a rubric to evaluate student communication with patients. This rubric is based on the 11 domains of pharmacist/patient communication. In 2009, the rubric was revised by the Big Ten Pharmacy Assessment Collaborative to create a more universal tool. The objectives of this study are to highlight the importance of revising assessment tools and describe data collected during the University of Illinois at Chicago (UIC) pilot. Method: Course coordinators at UIC included eight domains in the rubric that were deemed essential for assessment of second year pharmacy students’ patient interviewing skills. Each domain was scored: confident and consistent (CC), in development (ID), or needs significant development (NSD). The course coordinators provided verbal instructions on using the rubric to four faculty evaluators. In fall 2009, 19 groups of four students (n=76) were assessed. Results: The communication rubric was easily adaptable to the skills needed for patient interviewing. The faculty evaluators reported the top three benefits of the rubric were: 1) three
item-ranking for rapid evaluation, 2) its comprehensiveness and 3) reproducibility as it could be used for evaluating communication skills throughout the curriculum. Limitations of the rubric were: 1) adaptability to group communication skills, 2) translation of the three item-ranking scale to a letter grade, and 3) assigning one score for all elements of the domain. Implications: It is important to revise and evaluate assessment tools in order to improve overall assessment of students. Students and faculty can benefit from sharing assessment tools between colleges of pharmacy.

Assessment of Pharmacy Student Self-Confidence on One Specific Outcome Ability: Conceptual Competence. Suzanne M. Rabi, University of Illinois at Chicago, Marieke D. Schoen, University of Illinois at Chicago, Nicholas G. Popovich, University of Illinois at Chicago. Objectives: The objective of this study was to determine which of the UIC 10 outcome abilities was least changed over the course of advanced pharmacy practice experience (APPE) for students. Method: Fourth year doctor of pharmacy students from classes of 2008 and 2009 were surveyed. Students rated their self-confidence (scale 0-10) on an 81 question survey which is mapped to the UIC 10 general outcomes. The survey was administered three times during their APPE experience: 1) beginning, 2) midpoint, 3) completion. The same survey was administered each time. Results: Eight hundred sixty three surveys were completed. Over the course of APPE experience, the students from both classes had the least improvement in self-confidence related to conceptual competence: “the student shall understand the theoretical foundations of the pharmacy profession and its position in healthcare”. Thirty-three percent of the survey questions related to conceptual competence were least changed. Of the questions related to conceptual competence, students had the least change in self-confidence related to “describing the role of pharmacy practice within a changing healthcare system” (pre-APPE: 7.23/post-APPE: 8.49) and “describing the potential barriers that prevent change in pharmacy practice” (pre-APPE: 7.29/post-APPE:8.56). Implications: Although only 6% of the questions were related to conceptual competence, student self-assessment was the least improved for this outcome ability. Students’ self-confidence for this competency was high at the beginning of APPE and it could be that this competency may not change over the course of APPE.

Audio Interdisciplinary Hospital Rounds to Teach Critical Thinking Skills: A Simulation in Listening. Michelle A. Favel, The University of Iowa, Robert F. Shaw, The University of Iowa, Mary J. Storry, The University of Iowa, Jeffrey C. Reist, The University of Iowa. Objectives: Despite therapeutics knowledge, many fourth year students struggle to successfully contribute during interdisciplinary medical team rounds. Skills required in this situation, including active and purposeful listening, application of knowledge, and critical thinking are often not the focus of traditional curriculum. To improve abilities in these areas, an active learning opportunity was developed to simulate typical hospital rounding scenarios. Method: During Pharmacy Practice Lab V, groups of 12 students listened to three different audio clips of simulated rounds which focused on therapeutic topics presented previously in a co-requisite lecture-based therapeutics course. Students were expected to listen and evaluate the rounding discussions and verbally contribute pharmacy recommendations when necessary. At one station, students were presented the opportunity to review a patient chart prior to “attending” audio rounds. Results: 108 students participated in the activities. Of these students, 57% responded to an evaluative survey of the laboratory activity. The activity was well received, with 100% of responders agreeing that 1) they had a better understanding of the topics addressed in lab because of the lab activities and 2) the topics covered in lab were important for a pharmacist to know and understand. Additionally, 98% of students agreed that the laboratory activities related well with the content of their other pharmacy courses. Implications: This innovative activity allows students the opportunity to develop the listening, application, chart review, “on-the-spot” thinking and verbal communication skills necessary during medical team rounds. This audio model may be used throughout the curriculum as an enhancement to lecture-based therapeutic courses.

Black & White to Shades of Gray: IPPE Facilitated Transition from Science-based to Clinically-based Curriculum. Pauline A. Cawley, Pacific University Oregon, Reza Karimi, Pacific University Oregon, Kristine Marcus, Pacific University Oregon. Objectives: To assess the impact of redesigning the IPPE provided at the beginning of our second year (IPPE2). Our assessment goals were to: i) explore if this approach assisted students in the transition from a primarily science-based first year to the more clinically-based second year of the program; ii) examine student, preceptor, and faculty impact, and iii) identify curriculum improvement areas to enhance students’ skills and confidence when entering the experiential and therapeutics areas. Method: IPPE2 was redesigned to provide four weeks of learning activities in community practice, and two-weeks of independent study simulating health-system pharmacy experiences. Assignments included patient cases, simulated medical charts, orders, and calculations. Student support was facilitated using online discussion boards. Assessment activities included student reflections, survey data, and preceptor/faculty feedback. Examination data was compared for similar examination questions tested in 2008 versus 2009. Results: Examination data indicated improvement of student preparedness for P2 curriculum. The majority of students felt they had a good “head start” to the P2 year. Faculty enjoyed more productive and meaningful teaching of the early P2 didactic materials because student baseline understanding was enhanced. Several areas of the P1 curriculum are targeted for improvement to better prepare students for IPPE2 based on student and preceptor feedback. Implications: This unique learning process is now an important component of our experiential curriculum. Other schools can adopt this self-directed learning concept to facilitate transitioning from science-based to clinically-based curricula. The independent study component can also be used for health/weather emergency contingency planning.

Blended Learning for Pharmacy Students: Use of Pre-recorded Online Lectures and Live Classroom Discussion. Suzanne M. Rabi, University of Illinois at Chicago, Jerry L. Bauman, University of Illinois at Chicago, Marieke D. Schoen, University of Illinois at Chicago. Objectives: The objectives of this study were to describe attitudes of pharmacy students related to blended learning and to ascertain background factors that influence pharmacy students’ perceptions of blended learning. Method: The arrhythmia lecture series is in a core therapeutics class. It is traditionally taught with four one-hour in-class lectures and one three-hour recitation. For this study, the four lectures were delivered via pre-recordings that students viewed online on their own time and there was no recitation. Students completed a minute paper after each pre-recorded lecture and then attended three one hour in-class question and answer sessions with the professor; a patient case was posted on Blackboard™. Students were surveyed twice: after the lecture series and after the final exam. Upon course completion, two focus groups were held with 30 randomly selected students. Results: Approximately 70% of students who attended the in-class discussion were satisfied with the overall delivery. Students with GPAs <3.0 were more satisfied overall with
blended learning. Overall, the majority of students (55%) enjoyed the
time learning and recorded lectures. Success of blended learning is highly related to making the best use of
“in-class” time. Focused discussions and case scenarios are highly
valued during face to face time rather than a traditional lecture.

Blended Learning Strategies in a New College of Pharmacy: En-
hancing Student Therapeutic Relationships with Patient Care.
Deborah A. Wittman, Touro College of Pharmacy-New York, Keith
Veltri, Touro College of Pharmacy-New York, Rabia Tahir, Touro
College of Pharmacy-New York, Mary Choy, Touro College of Phar-
2010; 74 (5) Article 96. 

Dakota State University

Results:
errors for both groups were measured over a 45-month period.
where the mistake was caught” for the remote sites and comparison sites were, respectively: pharmacist
check (58% versus 69%) and partner check (10% versus 4%). Impli-
cations: The North Dakota study reported a lower overall rate (1.0%) and a slight difference in medication dispensing error rates between
remote telepharmacy sites (1.3%) and comparison sites (0.8%). Both
rates were less than the previous national reported level (1.7% error rate for 50 pharmacies, JAPhA, 2003;43:191-200).

Comparing Outcomes from Two Consecutive Therapeutics
Semesters that Utilized a Lecture-capture Device.
Abigail W. Yancey, St. Louis College of Pharmacy, Suzanne Bollmeier, St. Louis College of Pharmacy, Patrick M. Finnegan, St. Louis College of Pharmacy, Philip J. Wenger, St. Louis College of Pharmacy. Objectives: Students enrolled in the second and third professional year courses of Therape-
tics II and III (T2, T3) were given access to posted lecture files (slides and audio) after each live lecture for the first time throughout their
curriculum. This retrospective analysis was completed to better
determine differences in exam and final grades based on the length of
time lecture files were available. Method: Students enrolled in T2,
Spring, 2009 had access to posted lecture files for 72 hours following
each live lecture. This same group of students had unlimited access to
lecture files in T3 throughout the Fall, 2009 semester. Both T2 and T3
have three semester exams in addition to a final exam. Results: A
retrospective analysis revealed a significant difference for each of the
3 semester exams; however, students scored higher on two of the
exams in T2 (exam 1: p = 0.004, exam 2: p = 0.0017, exam 3: p < 0.0001). A comparison of the final exam and course grades showed
no difference between T2 and T3. Implications: Course coordinators
postulated that granting students’ access to the posted lecture files
throughout the semester would benefit them on the final exam in T3;
however there was no difference seen between the two semesters.

Comparing Perceptions from Two Consecutive Therapeutics
Semesters that Utilized a Lecture-capture Device.
Abigail W. Yancey, St. Louis College of Pharmacy, Suzanne Bollmeier, St. Louis College of Pharmacy, Patrick M. Finnegan, St. Louis College of Pharmacy, Alicia B. Forinash, St. Louis College of Pharmacy, Philip J. Wenger, St. Louis College of Pharmacy. Objectives: Students
enrolled in the second and third professional year courses of Therape-
tics II and III (T2, T3) were given access to posted lecture files (slides and audio) after each live lecture for the first time throughout their
curriculum. This retrospective analysis was completed to better
determine differences in use and perceptions based on the length of
time lecture files were available. Method: Students enrolled in T2,
Spring, 2009 had access to posted lecture files for 72 hours following
each live lecture. This same group of students had unlimited access to
lecture files in T3 throughout the Fall, 2009 semester. Both T2 and T3
have three semester exams in addition to a final exam. Results: A
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3 semester exams; however, students scored higher on two of the
exams in T2 (exam 1: p = 0.004, exam 2: p = 0.0017, exam 3: p < 0.0001). A comparison of the final exam and course grades showed
no difference between T2 and T3. Implications: Course coordinators
postulated that granting students’ access to the posted lecture files
throughout the semester would benefit them on the final exam in T3;
however there was no difference seen between the two semesters.
Having access to the files throughout the semester did not positively
influence grades.
Comparison of OSCE Absolute Criteria Reliability Established using the Angoff and Borderline Group Regression Procedures. Glenn Anderson, Texas Tech University Health Sciences Center, Ronald Hall, Texas Tech University Health Sciences Center, James Stoll, Texas Tech University Health Sciences Center, Arthur A. Nelson, Texas Tech University, Health Sciences Center. Objectives: To compare the reliability of Objective Structured Clinical Examination (OSCE) criteria developed by the Angoff and Borderline Group Regression (BGR) procedures. Method: Both the Angoff and BGR procedures were performed to develop absolute criteria for a 32 item Patient Counseling OSCE. A panel of eight faculty members was recruited to establish the two criteria. The Angoff procedure was performed first. Thereafter a BGR procedure was undertaken with the judge panel analyzing a random sample of 40 P4 student performances that were observed and scored during the School’s 2010 Annual Assessment. The BGR criterion was derived through the following procedure: initial independent judge assessment of performance (fail, borderline, pass, or mastery), discussion, final independent judge assessment, determine median judgment for each performance, regression analysis of judgment versus performance score. Generalizability studies estimated variance components using either an items-by-judges (Angoff) or performance-by-judges (BGR) study design. Decision studies estimated the facet effects upon Root Mean Square Error (RMSE), an estimate of criterion reliability. Results: RMSEs were 1.91% and 0.86% respectively for the Angoff and BGR procedures. The Angoff criterion was 74.39% (CI95% = 70.57% - 78.21%). Compared to the Angoff procedure, the BGR procedure derived a similar criterion (73.34%) with improved reliability (CI95% = 71.62% - 75.06%). Implications: BGR procedures provide improved reliability for criterion development when the assessment contains a modest number of items, such as with OSCEs. Such gains in reliability may improve pass/fail decision defensibility during high risk assessment.

Comparison of Selected Admission Criteria with First-year Pharmacy Academic and Objective Structured Clinical Exam Performance. Donald I. Hsu, Western University of Health Sciences, Eunice P. Chung, Western University of Health Sciences, Mark Bouthavong, Veterans Affairs, San Diego, Sunil Prabhu, Western University of Health Sciences, Wallace J. Murray, Western University of Health Sciences. Objectives: To compare selected admission criteria with first-year pharmacy academic and objective structured clinical exam (OSCE) performance. Method: The GPA and interview score are two of the major components evaluated for admission into the pharmacy program. The interview score is based on evaluation of communication skills and professional skills. OSCEs are conducted throughout the Western University curriculum with emphasis on communication skills. OSCEs are conducted throughout the Western University curriculum with emphasis on communication skills. The global communication (GC) rubric used during the OSCE is designed to evaluate communication skills and professional attitudes. The admission GPA was compared with P-1 cumulative GPA, and the interview scores were compared with P-1 OSCE GC scores for the graduating class of 2012. Results: Data for 109 students were evaluated. No correlation was observed between overall admission GPA or science GPA, and P-1 GPA. Students who performed well on the admission interview also performed well on OSCE 1 (p = 0.011). However, no correlation was observed between interview scores and the OSCE 2 GC score. Students who performed well on OSCE 1, also performed well on OSCE 2 (p = 0.001). Implications: Academic performance in subsequent years will need to be tracked and re-evaluated given that much of the critical thinking aspects of the curriculum occur in P-2 and P-3 years. More studies are needed to determine if a correlation exists between admission interview and OSCE scores.

Computer-Based Instruction on Substance Abuse and Drug Diversion in the Doctor of Pharmacy Program. Jennifer A. Reinhold, University of the Sciences in Philadelphia, Laura Pontiggia, University of the Sciences in Philadelphia, Mark Angeles, University of the Sciences in Philadelphia, Grace L. Earl, University of the Sciences in Philadelphia. Objectives: The 2005 National Center on Addiction and Substance Abuse survey detailed the incidence of drug diversion and the role of pharmacists in prevention. This study evaluated the effectiveness of an internet-based learning module to enhance understanding of the pharmacist’s role in preventing drug diversion. The aim is to study the change in the percent of correct responses from the pre- to post-module 10-question assessment (gain in knowledge). Method: A PowerPoint presentation was available to students using a Google University ® platform. Learning objectives were created and formed the basis for development of a presentation to deliver material in 4 broad areas: controlled drugs, drug diversion scope and mechanisms, federal regulations, and the pharmacist’s role prevention. Results: Twenty-seven students enrolled in the U2 year completed the study which reflected a 9.6% response rate. Sixteen (59%) had previous work experience in a community or other pharmacy area. The overall median percentage of correct responses increased from 60% (IQR 20%) for the pre-test to 90% (IQR 10%) for the post-test questions. The median percent gain in knowledge was 20% (IQR 20%) which was statistically significant and reflected a desirable outcome [Sign Test, p < 0.0001]. Implications: We found that the use of computer-based instruction was an effective means for educating students on substance abuse and drug diversion based on these significant findings. This tool could be used as a stand alone training module or as a course resource to promote self-learning.
a difference among females or males across pathways. Caucasian non-Hispanic students were more likely to have been diagnosed with depression than students of other ethnic backgrounds. Finally, the incidence of a diagnosis of depression was the same in incoming and matriculating students. Implications: Identification of higher risk groups may help the School better serve those in need of intervention with regard to depression to ensure success within the program and students’ personal well-being. However, the reasons for the observed differences need to be examined as other variables are likely to influence the incidence of diagnosis.

Description and Evaluation of a Capstone Research Experience. Cynthia A. Wuller, Southern Illinois University Edwardsville. Objectives: To describe a capstone research experience as developed by a school of pharmacy and to report the results from the measures used to assess the experience. Measures included a student evaluation at the conclusion of the experience and the number of posters accepted for presentation at a state or national pharmacy meeting. Method: The capstone research experience consists of four components; a semester long preparation class for Advanced Pharmacy Practice Experience (APPE) rotations and for the capstone research project, a five week APPE rotation to complete the research for the project with the guidance of a mentor, written manuscript and a poster presentation. After the poster presentation, students were asked to complete an evaluation about their capstone experience. Students self-reported to the faculty coordinator acceptance of their poster for a state or national pharmacy meeting poster presentation session. Results: There were 77 out of 80 (96.3%) students who completed the capstone experience evaluation. Mean responses on the evaluations were on the agreement side of neutral for questions about the interactions with the mentor for the project and with the faculty coordinator. Responses were more toward the disagree side of neutral when asked about being prepared for the experience and the amount of work required to complete the research project. In this inaugural class, four capstone posters were accepted for presentation at a state or national pharmacy meeting. Implications: The first year of the capstone experience was beneficial to the students but based on the feedback from student evaluations, improvements can be made for the future.

Description of Satellite/Distance Programs within Pharmacy Schools in the United States. Deepti Vyas, University of Missouri - Kansas City, Kathleen A. Snella, University of Missouri - Kansas City. Objectives: To provide a descriptive overview of various US distance/satellite schools of pharmacy. Method: Web based surveys were e-mailed to all coordinators/deans/chairs at 16 different universities with a total of 25 distance campuses. The survey consisted of 25 questions that addressed the structure of various distance programs. These included the model of lecture delivery, availability of a site coordinator, faculty advisors, and student organizations on the campus, amount of student interaction with faculty, and the percent of the curriculum taught by distance-based faculty. Results: Fifteen site coordinators (12 universities) responded to the survey tool resulting in a response rate of 60%. On average, each distance campus enrolled a total 178 students (range 82-300). Seven (47%) campuses offered the full program at the distance site. Nine (60%) campuses transmitted lectures via synchronous two way delivery while 1 university (6.7%) offered the entire curriculum via asynchronous lecture delivery. The remaining campuses combined these delivery methods. All but 1 (6.7%) campus had a site coordinator and 10 (67%) campuses had faculty advisors located on-site. On average, each campus offered membership to 3 (range 0-4) student organizations, the most common being APhA-ASP and SSHP. Only 6 (40%) site coordinators stated that students had significant face to face interaction with at least a faculty member while one stated that students had no face to face time with faculty. Implications: There is a wide variety in how distance educations programs are offered. This research describes the current models used to deliver the distance education pharmacy curriculum.

Descriptive Evaluation of a Medical Writing Elective Course. Fae Gwen Wooding, Massachusetts College of Pharmacy and Health Sciences-Worcester, Kimberly A. Pesaturo, Massachusetts College of Pharmacy and Health Sciences-Worcester, Dante Garland, Massachusetts College of Pharmacy and Health Sciences-Worcester. Objectives: The Center for Advancement of Pharmaceutical Education (CAPE) outcomes identify the need for effective communication, application of informational resources, and maintaining professional competence in accordance with established curricular guidelines. The purpose of this study is to describe a classroom experience in a novel medical writing elective course designed to support national educational goals for pharmacy students in an accelerated professional degree curriculum. Method: Course enrollees were encouraged to develop a manuscript suitable for submission to a reputable pharmacy journal throughout a 10-week course. Instructional methods included active-learning pedagogy, lecture, and group discussion utilizing multidisciplinary instructors, including academic support, library, and pharmacy practice faculty. Unique course elements included the use of writing circles for manuscript preparation and a meeting with an editor and reviewer from a reputable pharmacy journal. Assessment techniques consisted of formative and summative evaluations via online discussion postings, written critiques, and rubrics. Results: Three PharmD students in their first professional year of the curriculum successfully completed the course and prepared manuscripts for submission to reputable journals. Students felt the multidisciplinary faculty enhanced their drug information abilities and improved their written and oral communication skills. The peer review process helped students articulate criticism in a more constructive way and increased their interest in related activities, such as becoming a future peer reviewer. Implications: A medical writing elective course utilizing multidisciplinary faculty and unique instructional methods supported the advancement of effective communication and application of informational resources within the professional pharmacy curriculum as supported by national educational goals.

Development and Implementation of an Interprofessional Geriatric Assessment Course. Melanie A. Dodd, The University of New Mexico, Denise Zwahlen, The University of Kansas Medical Center, Betsy VanLeit, The University of New Mexico. Objectives: We developed an interprofessional geriatric assessment elective course at The University of New Mexico. Method: The course was designed as a 1-credit problem-based learning course available to all health science students. The students were presented with geriatric patient cases in different care environments to assess as a team. The cases were either paper-based or presented by a standardized patient. The students completed a self-assessment evaluation tool at the beginning and end of the course that primarily focused on their ability to work with an interprofessional team. Results: In the inaugural offering of the course, 10 students and 5 faculty participated from the professions of medicine, nursing, nutrition, occupational therapy, pharmacy, physical therapy, and physician assistant. The primary barriers in developing the course were learning how to offer a course across different Colleges and different curriculums within the University. Overall, the course was well received and several students commented...
that it should be a required course for all students. On the self-assessment questionnaire, on a scale from 1 to 7, the mean score on their ability to contribute to a team to develop a treatment plan for a geriatric patient increased from 4 to 6. The most important elements that students felt they learned from the course were the skills and knowledge that each profession brings to the team and how to work with the team. **Implications:** Based on the feedback from the students, the course will be expanded to 2-credits and we will continue to evaluate the barriers to include more healthcare professions.

**Development and Implementation of Hybrid Simulations to Introduce Novice Learners to Acute Clinical Situations.** Erica J. Russell, University of Missouri - Kansas City, Eric A. Wombwell, University of Missouri - Kansas City, Deepti Vyas, University of Missouri - Kansas City, Frank Caligiuri, University of Missouri - Kansas City. **Objectives:** To provide students with the opportunity to apply pharmacotherapy principles in high stress, low risk simulated clinical encounters. To better equip students to effectively serve in the role of a member of a multidisciplinary team by exposing them to acute clinical encounters. To better equip students to effectively serve as a member of a multidisciplinary team by exposing them to acute clinical situations that otherwise may not be available. **Method:** Three distinct simulation scenarios were developed - an asthma exacerbation, acute heart failure exacerbation, and an endocarditis infection with a subsequent anaphylactic reaction. The simulations consisted of a case work-up period, the clinical encounter, and a debriefing period, each 30 minutes in length. The scenarios incorporated concepts of proper medication utilization, interprofessional communication, and patient education through use of high fidelity simulation mannequins and standardized patients. Knowledge-based domains were assessed using pre- and post-quizzes. Retention of knowledge was assessed by re-administration of these quizzes three months later to participating and non-participating students. Changes in self-perceived clinical skills were assessed using a confidence survey. The series was evaluated by a student satisfaction survey. **Results:** Twenty-eight students were enrolled in the simulation experience. In comparison to pre-simulation, all knowledge-based domains demonstrated statistically significant improvements (p<0.05) at the completion of the simulation series. Knowledge retention was significantly (p=0.004) higher among the participating students compared to non-participating students. 85.2% of responding students were in strong agreement that simulations were a positive experience. 77.8% felt simulation training enhanced clinical learning in comparison to standard lectures alone. **Implications:** Hybrid simulation demonstrates the potential to be a useful active learning strategy for novice learners. It also appears that simulation training enhances long term knowledge retention.

**Development of a Leadership Retreat for Student Pharmacist Leaders.** Michael Gonyeau, Northeastern University, Jenny A. Van Amburgh, Northeastern University. **Objectives:** To develop a retreat for student leaders to enhance learning principles of leadership and diversity, increase self awareness and how to apply their identified strengths, and improve a sense of community among pharmacy student organizations. **Method:** A 1 day retreat at an off-campus location was developed. The program included a number of team-building and ice-breaker activities followed by an interactive program focusing on leadership and diversity. Each participant completed Strengthsfinder®2.0 prior to the retreat and received their 5 signature themes. Activities were designed to identify/discuss leadership traits, assess the meaning of the 5 signature Strengthsfinder®2.0 themes, apply such themes to case discussions, maximize each individual’s talents and discuss issues of diversity and how leadership may help to overcome adversity. All participants completed a 6 question reflective survey assessing new personal discoveries, strength identification, effective strength utilization and team interaction, and life balance strategies. **Results:** Twenty students and 6 faculty/staff participated in the retreat. Student participants ranged from year 2-6 in our program and represented all major student organizations. Post-retreat survey responses revealed increased awareness of strengths, understanding of team dynamics, strategies for better life balance and specific approaches to intentionally incorporate signature themes. **Implications:** A leadership retreat offers an opportunity for student pharmacist leaders to focus on the identification, development and application of leadership principles to improve their effectiveness in student organizations. It is also our hope that enhanced knowledge of such skills will lead to a new generation of leaders for our profession.

**Development of a Tool to Assess Student Professionalism: a Multi-institutional Pilot.** Kristin K. Janke, University of Minnesota, Suzanne M. Rabi, University of Illinois at Chicago, Katherine A. Kelley, The Ohio State University, Sarah Kuba, University of Wisconsin-Madison. **Objectives:** To develop a rating system that students could use in self assessing professionalism. To develop a rating system that differentiated between students and could potentially accommodate growth if used for repeated measures. **Method:** In January 2009, the Big Ten Pharmacy Assessment Collaborative created a rating system to measure pharmacy student professionalism based on the RIME evaluation method A multi-institutional faculty panel consulted the medical and pharmacy literature and developed a seven question survey based on 5 domains of professionalism: 1) reliability, responsibility and accountability, 2) lifelong learning and adaptability, 3) relationships with others, 4) upholding principles of integrity and respect and 5) citizenship and professional engagement. Five levels of competency attainment were defined and aligned with a modified Miller’s Taxonomy (i.e. Knows, Knows How, Shows, Shows How & Does and Teaches). Three colleges of pharmacy administered the survey electronically to first year pharmacy students. **Results:** Three hundred thirty five first year students completed the survey. Student self-ratings were distributed across the entire range of levels. Students demonstrated the highest confidence in domain #4: upholding principles of integrity and respect (3.92) and the lowest confidence in domain #5: citizenship and professional engagement (2.89). Reliability of the instrument was assessed using Cronbach’s alpha and was 0.736. **Implications:** The modified RIME rating system may have advantages over likert ratings. In addition, the potential exists for use of the tool in documenting student growth over time. The tool may also be useful beyond self assessment (e.g. lab faculty, preceptors).

**Development of an Integrated Pharmacy Skills Laboratory Course Sequence.** Erika L. Kleppinger, Auburn University, Amy R. Donaldson, Auburn University, Ray Lorenz, Auburn University, Daniel Parsons, Auburn University. **Objectives:** A pharmacy skills laboratory course sequence was designed to introduce basic patient assessment skills in the PY1 year and build upon these skills during the PY2 and PY3 years while integrating concurrent course material from the curriculum. **Method:** Course content was mapped to the school’s ability-based curricular outcomes during development of the 6-semester lab sequence. Each week students attend a 1 hour pre-lab lecture and 2 hours of laboratory instruction. During the PY1 year the course focuses on medical terminology, communication skills, basic physical assessment skills, immunization administration, and pharmaceutical calculations. Physical assessment skills are continued in the PY2 year, however a majority of labs are focused on pharmaceutical compounding skills, including sterile products. Patient
Documenting Trends in Empathy and Learning in a Psychopharmacotherapy Course. David Fuentes, Pacific University Oregon. Objectives: Exposing students to realistic, progressive cases in a pharmacy school’s psychopharmacotherapy course may help them integrate concepts of medication therapy plans and psychiatric/medical disorders with empathy for patients. Course content, the instructor’s clinical practice experience, patient-specific information and story lines, prognostic information and outcomes were integrated into cases featuring patients with multi-axial co-morbidities. Method: Students read 12 cases, following patients from the chief complaint to the time of discharge. Cases contained: detailed histories and history of present illness; instructor comments; labs; diagnostics; medication regimens; personal patient statements; and, perspectives from various providers involved in health care delivery. Afterwards, students wrote a free-form statement regarding what they found most interesting about the cases. These were collected 4 times throughout the 2-week block, reviewed by faculty and assigned to the categories of: Patient-focused (P); Treatment/medication-focused (T); Disease/disorder-focused (D); and, Role of the healthcare provider (R). Results: Students’ focuses from the 1st, 2nd, 3rd and 4th collection showed a steady increase in patient-focused comments in the percentages of 31%, 33%, 35%, and 40%, respectively. From students’ comments, we found that the cases enabled them to value the individual qualities of each patient and recognize general and specific challenges faced by patients with mental illness. Implications: Students’ comments showed it was possible, using this simple reflective exercise, to identify and document students’ empathic nature and concern for the patient while not diminishing interest in the traditional focuses (i.e. drug therapy, treatment algorithms) in a pharmacy curriculum.

Does Operating a Community Telepharmacy Affect Dispensing Errors within the Practice? Evidence from North Dakota. Daniel L. Friesner, North Dakota State University, David M. Scott, North Dakota State University, Charles D. Peterson, North Dakota State University. Objectives: To examine differences in dispensing errors within community telepharmacy practices by comparing error rates across central sites (community telepharmacy sites with pharmacists present) and the corresponding remote sites, which are staffed by a registered technician and overseen by the pharmacist(s) at the central site. Method: Pharmacists and technicians at 14 remote sites and 10 central sites were trained on the use of the Pharmacy Quality Commitment (PQC) reporting system. A quality-related event (QREs) was defined as a “near miss” (a mistake caught before it reaches the patient) or an “error” (a mistake discovered after the patient receives the medication). QREs for both groups were collected using the PQC system between January 2005 and September 2008. Results: The remote (central) telepharmacy group reported 47,078 (62,480) prescriptions and a QRE rate of 1.34% (1.43%). QREs at the remote (central) sites were more (less) likely to be caught at the final pharmacist check (58.2% versus 40.8%, p-value<0.01) and less (more) likely to be caught by the patient (2.7% versus 9.1%, p-value<0.01). Remote (central) sites were more (less) likely to select an incorrect strength (18.6% versus 14.3%, p-value=0.03) and enter incorrect directions (31.5% versus 22.4%, p-value<0.01) in the medication entry process. Implications: Aggregate QRE rates for remote sites are lower than central sites, both of which are lower than reported nationally (1.7%, JAPhA, 2003;43:191-200). This suggests that the North Dakota community telepharmacy model does not compromise public safety. However, the supervision of remote sites does impact the distribution of QREs within a practice.

Downloadable Audio Lectures to Enhance Learning in the Pharmacy Curriculum. Benjamin Chavez, Rutgers, The State University of New Jersey, Frank L. Hughes, Rutgers, The State University of New Jersey. Objectives: To describe students utilization and impressions of downloadable audio lectures as supplemental learning material in didactic pharmacy courses. Method: Using a USB-microphone and online audio recording software, a faculty member recorded a 20-minutes lecture as an mp3 file. This audio recording included the background, etiology, and symptoms of the disease state and followed a set of slides. The mp3 file was then made available via the online classroom management system. Students were instructed to listen prior to class, and any questions regarding the material would be answered in class. Results: A class of 215 students was surveyed, and 123 responded. A total of 106 students stated they listened to the audio file prior to coming to class, which represents 49% of the entire class. Fifty-two percent of respondents felt the audio file made them more prepared for class. When asked what they were most likely to do before class, 78.5% would listen to a downloadable lecture, 4%
Drug Information Services for the 21st Century: Utilizing Mobile Technology to Provide Real Time Drug Information. Kimberly B. Ayes, Lipscomb University. Objectives: The concept of physical drug information centers has limitations preventing direct patient care, face-to-face communication and capabilities in a mobile setting. Current technology allows potential users of drug information centers to access resources directly, bypassing expertise of drug information specialists. A mobile Drug Information Service (DIS) would be created that would not be a physical location, but a specialty service that could be practiced anywhere: office, community pharmacy, hospital rounds, patient bedside, health fair, medical mission trips, disaster drills and more. Method: An assessment of needs, cost and accessibility was performed. The ability to incorporate the contact point with the resources and documentation tool in one unit was an essential need. Direct cost included mobile technology and human resources, not physical space requirements. Accessibility needs included internet access without WiFi and ability to download products to mobile tool for use when service was unavailable. Results: An iPhone was selected as the mobile DIS tool. A DIS phone number and email address were established and mobile medical and drug information applications were downloaded. A drug information documentation tool for the iPhone was developed utilizing a commercially available application. The documentation tool allows capture of multiple fields, is searchable, and forms can be emailed or downloaded from the iPhone. Implications: Effective drug information for the 21st century can include mobile technology and mobilization of drug information specialty pharmacists out of the traditional drug information “center”. Future studies will evaluate the implementation phase and further development of the documentation tool.

Effect of an Evidence-Based Medicine Course on Students’ Self-Reported Ability-Based Outcomes. Cynthia Jackevicius, Western University of Health Sciences, Vikrant Vats, Western University of Health Sciences. Objectives: Evidence based medicine (EBM) is one of the many core skill sets that pharmacy students at Western University of Health Sciences are taught. The objective of this study was to evaluate the impact of the EBM course on students’ self-reported ability-based outcomes (knowledge and abilities, interests and beliefs) regarding EBM. Method: Second year pharmacy students completed a paper-based survey before (August 10, 2009) and after (September 4, 2009) the completion of 4 week EBM course. The response rate was 78.3% (108 of 138 students). Survey questions were related to 3 domains: abilities/knowledge, interests and beliefs. Results: The average age was 26.3 years and the majority of respondents had undergraduate degrees (89.8%) and experience working in retail settings (76.9%). Although all 7 items in the knowledge/ability domain increased significantly after the course (p<0.05), two items (students’ ability to search the various EBM resources and interpret biostatistics) were scored lowest at baseline and showed greatest improvement. Students were interested in increasing their ability to search and evaluate clinical data/evidence at baseline and after the course. Students also believed that pharmacists should be efficient in searching for and interpreting clinical studies. Implications: The EBM course at Western University College of Pharmacy is based on the 5A model (Ask, Acquire, Appraise, Apply & Assess). This 4-week course increased students’ self-reported knowledge, ability to apply principles of EBM, and the need for EBM for pharmacy students. This confirmation supports using the 5A model as a standard for teaching EBM to pharmacy students.

Enhancing Student’s Assessment of Patient Drug Therapy Problems in a Pharmacy Practice Laboratory Environment. Deborah A. Wittman, Touro College of Pharmacy-New York, Shreya Patel, Touro College of Pharmacy-New York. Objectives: Traditionally, in a pharmacy practice laboratory, students are provided with limited information to assess prescription orders for potential errors and omissions. In this laboratory environment, students are provided with subjective and objective information to identify if there are any current drug therapy problems (DTPs). The students then formulate a treatment plan to resolve DTPs identified in addition to identifying medication errors and omissions. Method: Pharmacy practice laboratory course is offered during the second academic professional year. Each student receives a patient case with 3 prescriptions, is required to identify and describe potential DTPs and provide appropriate recommendations. In addition, the student must determine whether the prescriptions to be filled are safe, accurate, and written correctly. If an error is identified, the student calls the prescriber with a recommendation and fills the prescription accordingly. Results: Students were evaluated using a rubric format. Performance was assessed based on two components: 1. ability to identify DTPs, provide appropriate recommendations, and 2. ability to identify errors or omissions on prescriptions and provide appropriate prescribing recommendations. The combined average for identification of DTPs and recommendations component during lab weeks 2, 3 and 4 was 60%, 75%, 90% respectively. The combined average for accurately filling prescriptions during lab weeks 2, 3, and 4 were 70%, 75%, 85% respectively. Implications: The use of patient cases in addition to filling prescriptions accurately and safely enables the students to practice as they were a pharmacist on the health care team providing optimum care for the patient.

Evaluating Pharmacy Students’ Understanding of the Pharmaceutical Industry. James G. Alexander, Rutgers, The State University of New Jersey, Joseph A. Barone, Rutgers, The State University of New Jersey, Christine E. Novak, Rutgers, The State University of New Jersey, Lucio R. Volino, Rutgers, The State University of New Jersey. Objectives: The objective of this study is to evaluate the outcomes of the “Introduction to the Pharmaceutical Industry” course by examining the impact of the course on participating pharmacy students’ perceptions and understanding of the pharmaceutical industry. Method: An anonymous survey was administered to all registered students during the first class meeting and then again at the completion of the course to measure any changes in the students’ perceptions. They rated their level of awareness and understanding of employment opportunities and development of medications in the industry, how well the pharmaceutical industry is serving its customers, attitude toward the pharmaceutical industry, and degree of trustworthiness of pharmaceutical companies. Results: Survey results indicated that the course offered students new information about the pharmaceutical industry as demonstrated by the increase in the awareness of employment opportunities and the greater level of understanding of how medications are developed in the pharmaceutical industry. Students also developed a more positive attitude toward the industry as demonstrated by an increase in the reported degree of trustworthiness and belief that pharmaceutical companies are serving their customers well. The course enhanced students’ awareness of
Evaluation of Student and Faculty Use and Satisfaction with WIKI Technology for Collaborative Case-Based Learning. Bonnie A. Falcone, University of Pittsburgh, Denise L. Howrie, University of Pittsburgh, Susan M. Meyer, University of Pittsburgh. Objectives: Evaluate student and faculty use and satisfaction with WIKI technology for collaborative patient case-based learning. Method: WIKI technology was introduced to 108 second-year students in the PharmD program in fall 2008. These students then participated in a 1-month-long required collaborative capstone case using WIKIs during fall 2008 and in spring 2009 in a 2-semester pharmacotherapeutics course sequence. Feedback was provided by faculty using WIKI technology prior to final group submission. Student and faculty WIKI use patterns were evaluated with the embedded WIKI statistical tool and manual data extraction. Surveys were administered after completion of the spring 2009 case to evaluate student and faculty satisfaction with WIKI technology. Results: 108 students made 936 contributions in fall 2008 (mean 9, range 1-62; median 6, IQ range 4-11) and 1617 (mean 15, range 2-66; median 12, IQ range 9-20) in spring 2009 to their group WIKIs. At least one WIKI contribution was provided by 96% (fall 2008) and 97% students (spring 2009). Group WIKIs were first utilized within 6 (37.5%), 12 (50%), 48 (75%) and 60 (100%) hours after the case was assigned. Thirty-five students completed the survey. A majority indicated WIKI technology increased or enhanced: feedback from faculty (74.3%), discussion of ideas (63%), cooperative/collaborative work among group members (68.6%), and case final version (65.7%). Participating course faculty indicated they would consider using WIKI technology in the future. Implications: Use of group WIKIs may provide a new tool for pharmacy students to enhance how they conduct collaborative work and for faculty to provide student feedback.

Evaluation of the Use of Natural Medicines in a Self Care and Medication Elective. Diane Nykamp, Mercer University. Objectives: To assess student perceptions regarding their knowledge of natural medicines and to determine which type of active learning method was preferred. Method: Pharmacy students (P2 and P3) voluntarily completed pre and post study questionnaires assessing their knowledge on the use of natural medicines during an elective Self Care and Self Medication elective course during fall 2009. The questionnaire was divided into five sections: knowledge, patient education, marketing to the consumer, evaluating professional and consumer literature, and product selection. For each section, respondents were asked to rate their confidence or preparedness (using a 4-point Likert scale with responses ranging from 1 poor to 4 excellent). One open-ended question asked what their primary concern was regarding their role in providing information on natural medicines. Additionally, students were asked to rate the type of active learning method they preferred. Results: There was a significant difference (p<0.05) in all 5 sections when comparing student perceptions at the beginning and conclusion of the course. The preferred learning tools were two professional web base sites: Natural Medicines Comprehensive Database; Clinical Management Series and The Pharmacist’s Letter (mean 3.73, SD= 0.533 and 3.62, 0.804 respectively). The least preferred learning tool was the use of a case based textbook (mean 2.81, SD= 0.938). Implications: An elective class in natural medicines increased students’ perception of their knowledge, ability to deliver patient education, evaluate literature and make product selections.

Evidence Based Seminar Rubric Revision. Jane R. Mort, South Dakota State University, James R. Clem, South Dakota State University, Jodi R. Heins, VA Medical Center, Thaddaus R. Hellwig, South Dakota State University, Kim A. Messerschmidt, Sanford Medical Center. Objectives: Utilize rater reliability data to improve a seminar rubric. Method: Fourth year pharmacy students complete a formal seminar which is evaluated by three or more faculty members. The tool contained 17 items in six categories with three levels rankings (“unsatisfactory, satisfactory, and outstanding”). An evaluator training session was provided in the spring of 2008 after utilizing the tool for one year. The tool was then used for one more year. Percent agreement among evaluators was determined before and after the training. These results were then used to analyze and revise the rubric. Results: Percent agreement among faculty was 61.9+0.7 in 2007 and 61.9+13.0 in 2008, indicating no improvement in agreement with training. Similarly, percent agreement determined by collapsing two performance levels (“unsatisfactory” versus “satisfactory” or “outstanding”) also did not improve with training but did show a much higher level of agreement (96.5+5.5 in 2007 and 95.7+6.0 in 2008) compared to three performance levels. Item analysis in 2007 showed a range of percent agreement (54.5 to 77.9) with the lowest agreement on quality of objectives and slide features. Based on these results a working group revised the seminar rubric to contain two levels of performance (unsatisfactory, satisfactory), additional room for written comments by each item, and improved descriptors on items with low reliability. Implications: Often rubrics are revised based on general impressions without sound scientific basis. This study demonstrates the process for evidenced based rubric revision which is critical to sound assessment practices.

Exploring the Relationship of Social and Emotional Competence on Student-Patient Consultation Performance. Suzanne M. Galal, University of the Pacific, Sian Carr-Lopez, University of the Pacific, Craig R. Seal, University of the Pacific. Objectives: To assess the impact of social emotional competencies (SEC) on student-patient consultation performance. Method: 217 first-semester pharmacy students enrolled in a Practicum course were evaluated in simulated patient consultation sessions. The evaluations were conducted by second-year Teaching Assistants who used a point scale to assess performance as well as free-text comments. The comments were categorized by the instructor and confirmed by a second investigator into SEC or technical skills. The researchers had access to scores on the Collegiate Assessment of Social and Emotional Competence (CA-SEC), that provides information on self perception of frequency of emotional behaviors in recognition, regulation, and impact that influence social interactions. The TA evaluations, simulation scores, course grades, and CA-SEC assessment were evaluated for themes between SEC and student performance. Results: For the free-text comments on student performance, 82% were attributed to SECs, with 18% being coded for technical skills. Interestingly, a pattern of SEC emerged, with Pharmacy students reporting lower frequency of use of impact SEC, compared with recognition and regulation. This pattern is pronounced in Pharmacy students compared to other student populations. Implications: SEC is important for student success in relating and responding to patient needs. Impact SEC is perhaps most important; however, Pharmacy students are generally reluctant to employ those types of behaviors. Future studies are...
needed to evaluate the depth and breadth of the issue, and if confirmed, Pharmacy education will need to incorporate more opportunities for students to practice and develop essential SEC.

Factors Associated with Patients’ Understanding of their Pre-Admission Medication Regimen. Marketa Marvanova, Bellevue University, Christiane L. Roumie, Vanderbilt University, Svetlana K. Eden, Vanderbilt University, Courtney Cawthon, Vanderbilt University, Jeffrey L. Schnipper, Vanderbilt University, Sunil Kripalani, Vanderbilt University. Objectives: We examined the effect of health literacy (HL), cognitive function, number of medications, and other factors on patients’ understanding of their pre-admission medication regimen. Method: Patients at 2 large hospitals provided at baseline an assessment of HL, cognitive function, and sociodemographic information. A medication understanding score was computed based on patients’ ability to provide indication (1 point), strength (1/2 point), number of units/tablets per dose (1/2 point), and frequency (1 point) for up to 5 prescription medications randomly selected from their pre-admission medications. Scores ranged from 0 to 3. We used proportional odds logistic regression to analyze the association of HL with medication understanding scores, adjusting for cognitive function, number of pre-admission medications, and other a priori defined patient characteristics. Results: Patients (N = 689) had a median age of 61; 58% were male, 78% were White, and 21% had marginal or inadequate HL. The median number of prescription medications was 8 and the median medication understanding score was 2.5. Marginal or inadequate HL was highly associated with lower medication understanding scores (p < 0.0001). Being prescribed more medications was also highly associated with lower scores (p < 0.001). In addition, Black race, male gender, and impaired cognitive function were associated with lower medication understanding scores (p < 0.05 for each). Implications: Patients’ HL, number of medications, cognitive function, race, and gender are significantly associated with their understanding of the pre-admission medication regimen. Clinicians should be aware of these factors when performing medication reconciliation, and counseling patients about safe and effective medication use.

Factors that Influenced Student Authors to Participate in a Scholarly Experience Leading to a Publication. Diane Nykamp, Mercer University, John E. Murphy, The University of Arizona, Leisa L. Marshall, Mercer University, Allison Bell, Mercer University. Objectives: To examine factors that influenced students in doctor of pharmacy programs to collaborate with faculty members, preceptors, or others in scholarly activities that resulted in journal publications. To determine if pharmacy students who published in the pharmacy literature were interested in a career in academic pharmacy, considered themselves high achievers, and were satisfied with their current training or career choice. Method: A 17-question survey instrument was emailed to student authors of peer-review papers published between 2004-2008 in one of 6 pharmacy journals. Results were analyzed to determine factors influencing student participation in scholarly activities and whether they considered a career in academic pharmacy. Results: Factors that respondents found valuable about their participation in the scholarly activities leading to publications included personal fulfillment and making a contribution to the literature. Respondents indicated they were more interested in a career in academic pharmacy after their participation in the scholarly experience (p < 0.001) compared to prior to this experience. Implications: Various factors influenced participation in scholarly activity and student participation authorship of a peer-reviewed manuscript may lead to increased interest in a career in academic pharmacy.

Faculty Development Workshop Series to Improve Delivery and Assessment of Student Learning. Kathryn K. Neill, University of Arkansas for Medical Sciences, Eric F. Schneider, University of Arkansas for Medical Sciences, Martha H. Carle, University of Arkansas for Medical Sciences, Cindy D. Stowe, University of Arkansas for Medical Sciences. Objectives: Emphasis on curricular mapping of educational content to profession-based competencies and outcomes has challenged faculty to investigate methods of teaching and assessment. However, many have had limited instruction in educational methodology. A workshop series to meet faculty needs was conducted to advance the development, delivery, and assessment of student learning outcomes. Method: Four 90-minute sessions were delivered. Session 1 focused on translating competency statements into a roadmap emphasizing closing the loop between curricular mapping and assessment of students. Session 2 addressed constructing multiple-choice items by developing a good stem and distractors with group practice. Session 3 involved group item review and discussion of item statistics. Session 4 presented options regarding computerized exams and academic integrity. A survey link was emailed to faculty after series completion. Results: Twenty faculty participated in at least one session. Survey respondents agreed with having written instructional objectives (81%) and good multiple choice items (72%), illustrated the advantages of item review (90%), and the importance of item analysis (90%). The item review process and mapping questions to delivered learning objectives were employed in at least five required courses and a high-stakes summative exam within one year. Multiple courses are entering year two focusing on greater use of item statistics to improve examinations and strategically drive new item development. Implications: The concerted effort to establish meaningful learning objectives and assessment questions for educational content, delivered via a workshop series, provided the opportunity for faculty to develop skills needed to enhance curricular assessment.

Faculty and Student Attitudes towards Interprofessional Education: Correlations and Opportunities. Elena M. Umland, Thomas Jefferson University, Kevin J. Lyons, Thomas Jefferson University, Carolyn Giordano, Thomas Jefferson University. Objectives: Faculty support of interprofessional education (IPE) is viewed as important in influencing students to embrace IPE. This study examines the relationship between pharmacy faculty and student attitudes toward an IPE program at Thomas Jefferson University (TJU). It compares these results to similar relationships in medicine, nursing, occupational therapy (OT) and physical therapy (PT) at TJU. Method: At the conclusion of year one of a two-year longitudinal IPE program, 190 medicine, nursing, OT, pharmacy and PT faculty and 496 students completed the Interdisciplinary Educational Perception Scale (IEPS). The IEPS measures 4 attitudinal factors: 1) professional competence/autonomy, 2) perceived need for interprofessional cooperation, 3) perceived actual interprofessional cooperation and 4) valuing the contributions of others. It is scored on a 5-point Likert scale. Results: Overall attitudes of pharmacy faculty and students were high (4.05 and 4.02). Pharmacy faculty attitudes were higher than student attitudes on all factors except factor 4. A similar pattern emerged between the faculty and students in medicine, nursing and OT. PT faculty scored higher than PT students in all 4 factors. Faculty in all disciplines scored lowest on factor 4 (mean range 3.26 to 3.92). Implications: Faculty support is necessary for successful implementation of IPE programs and their high attitudes towards IPE are reflected in the high student attitudes. High faculty scores towards IPE may also suggest higher acceptance of IPE-related faculty
development programs. Given the results observed with factor 4, more in-depth evaluation of the items used to measure this factor will be undertaken and faculty development programs created accordingly.

**Familiarity with Calculations Improves Patient Survival Rates during Advanced Cardiac Life Support Simulations.** Laura A. Mandos, University of the Sciences in Philadelphia, Michael Cawley, University of the Sciences in Philadelphia, Laura Finn, University of the Sciences in Philadelphia, Lindsay Palkovic, University of the Sciences in Philadelphia, Craig B. Whitman, University of the Sciences in Philadelphia. **Objectives:** The objective of this student was to compare the difference in patient survival between groups that completed an additional calculation set and groups that completed only one standard calculation set. **Method:** Students were randomly assigned to standard or additional calculations groups (6-8 students/group/simulation). Simulation leaders were blinded to group assignments. Students completed one week of ACLS simulation orientation and one set of 13 Quick Fire Calculations during the last week of Fall 2008 semester. The standard calculation group did not receive additional practice, but the additional calculation group completed one additional set of Quick Fire Calculations in the Spring 2009 semester. Both groups of students completed one simulation during the end of the Spring 2009 semester. Simulated patient survival rates and student satisfaction data were collected. **Results:** Eleven of fifteen (73%) simulated patients survived from the additional calculations group. Five of fifteen (33%) simulated patients survived from the standard calculations only group. Nearly 50% of students that completed the survey enjoyed the simulation and would like for the activity to be a standard component of the pharmacotherapeutics laboratory course. **Implications:** Strategic placement of pharmacotherapeutics lectures and complementary laboratory activities may increase student preparedness and success rates of laboratory activities. Additional practice of pharmaceutical calculations improves the ability to perform calculations in a high pressure environment. Student feedback supports ongoing utilization of technology in the classroom.

**Fun with Pharmacy: Game Show Activities in the Classroom.** Benjamin Chavez, Rutgers, The State University of New Jersey, Lucio R. Volino, Rutgers, The State University of New Jersey, Eric H. Gilliam, The Queen’s Medical Center, Rolee Pathak, Rutgers, The State University of New Jersey. **Objectives:** To describe the implementation of three game show activities in the pharmacy curriculum and their utility in the assessment of student knowledge of therapeutic topics. The application and students’ perception of these teaching methods are also discussed. **Method:** Three game shows were adapted to introduce/review course material for the pharmacy classroom: Family Feud, The Price is Right, and $100,000 Pyramid. Electronic powerpoint templates were used for Family Feud and $100,000 Pyramid. Family Feud required surveying the pharmacy practice faculty to answer questions on a wide range of pharmacy topics. Answers were tallied and ranked based on response rates to obtain the “top answers”. Students were then challenged to answer the questions in small breakout sessions during a reflection week designed to prepare students for the national licensing exam. The Price is Right and $100,000 Pyramid activities were conducted in large classroom settings focusing on specific self-care topics. **Results:** A survey of 240 students regarding Family Feud demonstrated that 83% of students either ‘strongly agreed’ or ‘agreed’ that this activity was educational. Eighty-three percent of students responded ‘strongly agree’ or ‘agree’ when asked if the sessions were interactive and enjoyable. The three game shows were well received and provided an enjoyable interactive method of learning. **Implications:** Using game shows created a less stressful teaching environment allowing for active participation from the entire class. Although this may not be applicable to every lecture, when done properly, it can compliment and reinforce material learned throughout the curriculum.

**First-Year Student Pharmacist Attitude and Knowledge of Complementary and Alternative Medicine using Self-Guided Learning.** Rabia Atayee, University of California, San Diego, Renu F. Singh, University of California, San Diego, Candis M. Morello, University of California, San Diego. **Objectives:** A new self-guided active learning format of complementary and alternative medicine (CAM) was designed for first year student pharmacists. Our objective was to determine whether the new learning format would change students’ attitude of CAM and increase CAM knowledge. **Method:** Students were given pre- survey at the beginning of the CAM series assessing their attitude and CAM knowledge using case-based knowledge questions. Students received an overview CAM lecture from a faculty member, and brief presentations with defined parameters on natural products from their peers, followed by administration of the same survey. **Results:** Forty-seven students (78%) completed the surveys; the majority were female (74.5%), of Asian race (63.8%), with average age of 24 years-old (range 21-36). Students’ response of “strongly agreed” on the importance of CAM in pharmacy practice improved from 28% to 55% and their response of “agree/strongly agree” on the harmful effects of dietary supplements increased from 60% to 96%. Overall the students’ attitude and self-assessed knowledge of dietary supplements’ use, mechanism of action, adverse effects, and drug-drug interaction improved significantly in median scores when the pre- and post surveys were compared using the Wilcoxon signed rank test, p<0.05. Percentage mean on the case-based questions improved 3-fold from pre- to post survey from 24% to 74% using dependent t-test, p<0.001. **Implications:** Small group self-guided learning of CAMs, followed by peer presentations, was successful in significantly improving students’ attitude and knowledge towards CAM. This format encouraged active participation and learning by students while defined parameters focused their questions when researching CAM databases.

**Health Information Sources and Believability for Pharmacy Students.** Ann M. Ryan-Haddad, Creighton University, Michele A. Poeppling-Faulkner, Creighton University. **Objectives:** To evaluate the preferred sources of health information as utilized by pharmacy students, and determine how reliable the students believe each source to be. **Method:** The National College Health Assessment survey was presented online to all students enrolled in the pharmacy program at Creighton University. Incoming first year pharmacy students were also invited to participate in the survey. Questions about presentation of health-related information in various forms were asked. Students reported their most frequently used sources of information, and ranked the information found within those sources as either believable, unbelievable or neither. **Results:** Five hundred forty-four pharmacy students completed the survey. The most frequently utilized source of health information by pharmacy students was the internet, followed by pharmacy faculty/coursework, other health educators, health-center medical staff, parents and magazines. Though the internet was used with the greatest frequency, only 18.8% considered the information generally believable. Other health educators were reported most believable (95.1%), with health-center medical staff (91.7%) and pharmacy faculty/coursework (89%) ranked second and third respectively. The sources of information reported least believable were television, magazines, religious centers, and the internet.
and campus newspaper articles. **Implications:** Students rely on healthcare workers for a large portion of their health information. However, though the reliability of information available via the internet is questioned by students, it is utilized with the greatest frequency. As students are themselves considered educators of patients, care must be taken to ensure students are providing patients only information they have received through reliable sources.

**Health Literacy: Assessment of the Skills and Attitudes of Student Pharmacists using a Web-based Questionnaire.** Peter D. Hurd, St. Louis College of Pharmacy, Tricia M. Berry, St. Louis College of Pharmacy, Amy M. Tiemeier, St. Louis College of Pharmacy, Rebecca Reeds, St. Louis College of Pharmacy, Theresa R. Prosser, St. Louis College of Pharmacy, Gloria Grice, St. Louis College of Pharmacy, Nicole M. Gattas, St. Louis College of Pharmacy, Julie A. Murphy, St. Louis College of Pharmacy, Elizabeth Rattine-Flaherty, St. Louis College of Pharmacy, Jill Sailors, St. Louis College of Pharmacy, Wendy Duncan, St. Louis College of Pharmacy. **Objectives:** To evaluate the effectiveness of educational interventions on students’ skills and attitudes related to health literacy. **Method:** A questionnaire designed to assess students’ skills/attitudes related to health literacy had four sections: 1) pharmacy scenarios evaluating perceived pharmacist responsibility to intervene in low health literacy situations; 2) attitudinal questions about health literacy; 3) the use of various health literacy tools (Newest Vital Sign, Four Habits Model, teach back, AskMe3™, and REALM©); 4) a scenario about patient comprehension of medication instructions. The questionnaire was pilot-tested by an expert panel. The web-based instrument was administered to students in the 3rd (P3) and 4th (P4) professional years via email. P3 and P4 student results were compared to determine the impact of new educational interventions in the P3 year. A pre-/post-test design will be used as students move through the pharmacy curriculum. **Results:** In the pharmacy scenarios, compared to P3 students, P4 students felt the pharmacist had significantly more responsibility on a numerical literacy situation involving drug dosing. Both groups judged resolving language problems to be a pharmacist responsibility and agreed strongly that health literacy is a problem for society. P3 students (who received health literacy training) assessed their overall health literacy skills (t = 5.21, df = 118, p < 0.05) and use of Four Habits (p < 0.05) significantly higher than P4 students. No differences were found in the medication instructions section. **Implications:** The questionnaire has promise for evaluating differences in students’ assessments of their health literacy skills and attitudes. The educational interventions have positively influenced students’ skills/attitudes related to health literacy.

**Health Literacy: Use of the Four Habits Model to Improve Communication.** Julie A. Murphy, St. Louis College of Pharmacy, Amy M. Tiemeier, St. Louis College of Pharmacy, Tricia M. Berry, St. Louis College of Pharmacy, Gloria Grice, St. Louis College of Pharmacy, Peter D. Hurd, St. Louis College of Pharmacy, Nicole M. Gattas, St. Louis College of Pharmacy, Theresa R. Prosser, St. Louis College of Pharmacy, Elizabeth Rattine-Flaherty, St. Louis College of Pharmacy, Rebecca Reeds, St. Louis College of Pharmacy, Jill Sailors, St. Louis College of Pharmacy, Wendy Duncan, St. Louis College of Pharmacy. **Objectives:** To assess and improve student communication with patients using the Four Habits Model (FHM). FHM is a patient- and relationship-centered framework for communicating with patients during medical interviews. This validated tool measures 23 aspects of communication that are separated into four habits: Investing in the Beginning, Eliciting the Patient’s Perspective, Demonstrating Empathy, and Investing in the End. **Method:** In the third professional year, students were concurrently enrolled in Interprofessional Patient Care (IPPC) and Advanced Pharmacy Practice (APP). In IPPC, FHM was taught in August and students’ use of FHM assessed by faculty on 15 aspects of FHM with standardized patients in September. In APP, students’ use of FHM was self/peer-assessed in October and evaluated by faculty in November. A three-point scale (unsatisfactory/competent/outstanding) was used to assess student performance on applicable FHM aspects. Changes in scores were analyzed using Wilcoxon signed-rank test. **Results:** Performance significantly improved (p < 0.05) from September to November in all assessed aspects of FHM except “Question Style” and “Expansion of Concerns” (Habit 1), “Identify Feelings” (Habit 3) and “Plan for Follow-Up” (Habit 4). Performance improved from competent to outstanding in five aspects, “Show Familiarity” and “Greet Warmly” (Habit 1), “Show Good Nonverbal Behavior” (Habit 3), and “Give Clear Explanations” and “Encourage Questions” (Habit 4). In six aspects, there was statistically significant improvement within the competent range. **Implications:** FHM can be effectively used to improve pharmacy students’ communication skills during patient interviews. Changes in teaching, course or assessment methods may be necessary to address areas where little to no improvement was seen.

**Horizontal Integration of Pharmaceutics and Pharmacy Practice Courses using a Novel “Cross-Over” Assessment.** Autumn L. Runyon, Duquesne University, Ira Buckner, Duquesne University, Peter L. Wildfong, Duquesne University. **Objective:** To describe the development and implementation of a “cross-over” assignment bridging introductory pharmaceutics and pharmacy practice courses in the first professional year of an entry-level PharmD program. **Method:** Faculty from Pharmacy Practice I: Introduction to Pharmaceutical Care and Pharmaceutical Principles and Drug Delivery Systems I identified toxicity calculations, ophthalmic/otic solution formulation, and related concepts as topics that students struggled to master and appreciate the relevance within contemporary pharmacy practice. The instructors collaborated to construct a mock court case study in which a medication error directly contributed to patient injury, the source of which was inadvertent misunderstanding of appropriate formulation and its effects on toxicity. Students were asked to read the case and answer a series of integrated essay and calculation questions, which highlighted the necessity of understanding fundamental pharmaceutical principles to ensure patient safety. Students were required to complete the assignment as a portion of their overall grade in both courses. **Results:** 189 students completed the assessment via Blackboard interface. The average score was 88.7%, with only 23 students receiving deficient scores on the toxicity and formulation questions, while 27 students received deficient scores on the medication errors section. **Implications:** Horizontal curricular integration between various pharmacy disciplines has generally been lacking. This has been observed to result in students learning in “content silos.” This assessment demonstrated that interdisciplinary teaching and assessment development can be used to promote horizontal integration of concepts from the pharmaceutical sciences and pharmacy practice.

**Identification and Classification of Plagiarism by Student Pharmacists and Pharmacy Faculty.** Lindsay E. Davison, Purdue University, Esther J. Last, Clarian Health, Amy Sheehan, Purdue University. **Objectives:** The purpose of this study was to determine the ability of student pharmacists and pharmacy faculty to define, identify and classify the severity of plagiarism. **Method:** Student pharmacists and faculty participants were asked to recognize the
definition of plagiarism and identify plagiarism in four samples; each sample contained an excerpt from a published journal article and a restatement of the excerpt that may or may not have constituted plagiarism. When plagiarism was identified, the perceived severity was assessed. Results: Two hundred and thirty-two of 626 (37%) student pharmacists and 55 of 91 (60%) faculty members voluntarily and anonymously completed an online questionnaire. The majority of student pharmacists and faculty reported receiving plagiarism education in high school, undergraduate programs, and again in pharmacy school. Nearly all student pharmacists and faculty members were able to correctly identify the definition of plagiarism. Student pharmacists and faculty were able to identify the more blatantly plagiarized excerpts but had difficulty identifying the less obviously plagiarized excerpts. In addition, respondents classified excerpts with decreasing severity as they progressed from more blatantly to less obviously plagiarized. Overall, student pharmacists had greater difficulty than faculty members in identifying an excerpt as plagiarized. Implications: The results of this survey prompted the creation of the Mandatory Online Plagiarism Tutorial for second professional year student pharmacists. A follow-up survey is planned for April 2010 to assess the perception of plagiarism by student pharmacists one year after this initial assessment and completion of the online tutorial.

Impact of Platform/Poster Project Within a Therapeutics Course on Drug Information Skills. Antonia Zapantis, Nova Southeastern University, Jehan Marino, Nova Southeastern University, Kevin Clauson, Nova Southeastern University. Objectives: To examine the impact of a combined platform/poster presentation project on students’ perceptions and knowledge on drug information skills within a therapeutics course. Method: A new platform/poster project was introduced into an existing therapeutics course promoting integration and application of the tenets of evidence-based medicine. Students were solicited to participate via WebCT by completing an IRB-approved pre and post questionnaire assuring no impact on their grade. The questionnaires assessed literature evaluation skills and perceptions of the project before it was assigned and after all components were graded. Eight questions assessed students’ drug information skills knowledge and perceptions, and 9 questions assessed professionalism including presentation skills perceptions. A 4-point Likert scale (i.e.1 most uncomfortable, 4 most comfortable) was most commonly employed. Descriptive and inferential statistics were used to analyze the data. Results: A total of 259 responses demonstrated significant improvements from the pre to post-questionnaire stage regarding literature evaluation perceptions (P<0.01). Students considered Medline navigation easier, although all databases showed improvement (Medline, IPA, Embase and MDConsult). Likewise, more students answered Medline and EMBASE scenarios correctly in the post-test (p<0.05). Whereas, there was no significant improvement in students’ abilities to properly select secondary databases for specialized situations (e.g., MedlinePlus, CINAHL). After this project, students were more comfortable in evaluating clinical trials and ability to obtain background information (p<0.05). Implications: Integration of a platform/poster project in a therapeutics course may result in an increase in drug information retrieval and evaluation student performance; alternate methods should be sought for conveying optimal selection of specialized secondary databases.

Impact of a Faculty-taught American Heart Association Basic Life Support Healthcare Provider Course. Roxie L. Stewart, The University of Louisiana at Monroe, Candace E. Chelette, The University of Louisiana at Monroe, Anthony L. Walker, The University of Louisiana at Monroe. Objectives: To assess the impact of a faculty-taught basic life support certification course on 1) student-faculty relationships and 2) monetary resources. Method: Students (149) earned American Heart Association (AHA) certification via optional courses taught by pharmacy care lab faculty members who are AHA certified instructors. Upon completion, students (57) responded to a survey via CreateSurvey containing open-ended and likert scale type questions. Faculty members were also surveyed regarding their experience with the course. Financial spreadsheets were kept for all expenses and revenue. This project was approved by the university Institutional Review Board. Results: According to the survey responses, the majority of students favored the faculty-taught course citing familiarity with instructors and environment; a good rapport with faculty; convenience; and costs. Responses of faculty members favored the course citing positive interaction with students; and the ability to provide a service to students by offering a lower cost alternative than outside BLS courses. Time constraints for both students and faculty were reported by each. Modifications to the program were made based upon some student comments. The program was self-supported financially and generated extra money to benefit the students through other care lab activities. Implications: Offering a convenient, lower cost BLS certification course taught by faculty members may facilitate positive student-instructor relationships and help foster a more intrinsic connection with the overall pharmacy program, as well as generate additional monetary income for other care lab resources.

Implementation and Effectiveness of a Structured Debate in a Pharmacy Classroom. Benjamin Chavez, Rutgers, The State University of New Jersey, Rolee Pathak, Rutgers, The State University of New Jersey, Rupal Patel, Rutgers, The State University of New Jersey, Eric H. Gilliam, The Queen’s Medical Center. Objectives: To describe the implementation of a structured debate teaching method in a pharmacy elective and evaluate students’ perceptions of effectiveness and preparation for advanced practice rotations. Method: An elective course of 25 students was divided into teams of 4-5 students. Teams were assigned a controversial therapeutic issues with either a “for” or an “against” position. Teams were provided one article with instructions to conduct further research and literature evaluations. Teams were paired to oppose each other in a structured debate with a predetermined format including opening statements, three main points of argument, a rebuttal to opposing team’s arguments, and a closing statement. The remainder of the class observed the debate, posed questions to each team, and voted on which side presented the better argument. Six months following the debate the class was asked to complete an anonymous survey electronically. Results: Nineteen of twenty-five students (76%) responded to the online survey. Only 3 (12%) students rated themselves as above average at evaluating literature before participating in the debate, while 12 of 25 (48%) students felt their ability to evaluate literature improved to above average or excellent after completing the debate. Thirteen students (52%) valued the debate method just as effective or more effective than didactic lecture. Thirteen students (52%) agreed or strongly agreed to participate in this type of learning method in other courses. Implications: The structured debate presents an effective alternative teaching method to compliment didactic lectures and other active learning styles in the pharmacy classroom.

Implementation and Evaluation of a Longitudinal Performance-based Assessment as a Pharmacotherapy Lab Practical. Stacy Kautza, University of Wisconsin-Madison, Casey Gallimore, University of Wisconsin-Madison. Objectives: Studies have shown that performance-based assessments in medical schools are superior...
Implementation of a Faculty Item Review Process for Examination Content in the Therapeutics Coursework. Kathryn K. Neill, University of Arkansas for Medical Sciences, Paul O. Gubbins, University of Arkansas for Medical Sciences, Scott Warmack, University of Arkansas for Medical Sciences, Jill T. Johnson, University of Arkansas for Medical Sciences, Eric F. Schneider, University of Arkansas for Medical Sciences, Martha H. Carle, University of Arkansas for Medical Sciences.

Objectives: In preparation for a distance campus, Therapeutics examinations were transitioned from predominantly short answer (SA) to computerized multiple choice (MC) format. A faculty item review process was implemented to allow content review; assess student learning objectives; link tested material to delivered lecture objectives; and provide a mechanism for feedback to students. This evaluation describes the process and compares exam results before and after implementation.

Method: Prior to exam administration via a computerized course delivery system, faculty met to review submitted items consisting of a title, stem, answer options, evaluated learning objectives, and a supporting reference. Before releasing grades, item statistics (degree of difficulty, discrimination factor, and upper and lower quartile performance) were reviewed to determine if items should be regarded or discarded. Review of the prior year’s item statistics were incorporated into subsequent sessions. Examination results for two years prior were compared to scores following item review implementation using descriptive statistics.

Results: Average values before and after implementation of the item review process, respectively, were examination scores (80.6% and 78.7%), standard deviation (7.4% and 8.5%), minimum (58.7% and 55.9%), and maximum (94.7% and 95.9%). Only standard deviation was significantly different (p=0.007), which may represent the loss of partial credit often conferred with SA format.

Implications: Transition to MC questions with faculty item review did not result in significant differences in examination scores or successful student completion rates though comparative data is limited. Additionally, item statistics and associated feedback provide students and faculty a ready association for covered and assessed content.

Implications: To assess the impact of a five day program for fourth professional year (P4) pharmacy students designed to review pharmacotherapeutic material and prepare students for career transitioning. Method: P4 students returned to campus after their 8th cycle of Advance Practice Experiences. The program consisted of lecture-style case reviews for NAPLEX preparation and small-group sessions focused on various skills/competencies, such as physical assessment and professional communications. These sessions were designed to foster student participation and interactive role playing. Guest speakers covered professional development topics. At the program’s conclusion, students anonymously completed a ten question survey. The survey evaluated various aspects of the seminar, including subject matter, design, benefit to overall student development, and allowed students to provide additional comments.

Results: Response rate was 94% (241/257). The majority (93%) felt that the subject matter was critical information. Most students (83%) indicated that the professional development lectures were “the most helpful”; whereas 63% indicated that the pharmacotherapy review was “the most educational”. The small group activities were well received, with the majority of students indicating that the activities encouraged participation (78%), were educational (83%), and enjoyable (82%). Students reported that the seminars covering advocacy and smoking cessation were beneficial (78% and 68% responded favorably, respectively), while 52% of students found the financial advising to beneficial.

Implications: The program was determined to be valuable to students, both as a pharmacotherapy review and as preparation for their transition to becoming practicing pharmacists. Student feedback will be used to make future improvements in the program.

Implementing a Rubric for Grading Extemporaneously Prepared Prescription Based Products in a Professional Practice Laboratory. Patricia M. Grace, University at Buffalo, The State University of New York, Alfred T. Reiman, University at Buffalo, The State University of New York, Jack Brown, University at Buffalo, The State University of New York, Jeffrey Balsam, University at Buffalo, The State University of New York, Zekun Feng, University at Buffalo, The State University of New York, Heath Johnson, University at Buffalo, The State University of New York, Curtis Johnston, University at Buffalo, The State University of New York, Katie Marcheson, University at Buffalo, The State University of New York, Marie San Roman, University at Buffalo, The State University of New York, Katherine Spence, University at Buffalo, The State University of New York, Phuong Tran, University at Buffalo, The State University of New York.

Objectives: A 2009 pilot study (Grace et al) resulted in greater interrater reliability (p < 0.05) for graders using a rubric as compared to graders using standard grading policies when evaluating laboratory products. In order to justify implementing a grading rubric in a Professional Practice Laboratory, the study was repeated, using a larger sample size and more graders. It is hypothesized that there will be greater interrater reliability for graders using a rubric as compared to graders using standard grading policies.

Method: A prescription exercise completed by 122 students was copied, and a packet with answer key was given to each of eight student volunteer graders. Four graders were randomly assigned to each grading condition. The Standard Grading (SG) group graded using standard course grading guidelines, and the Rubric group (R) graded using a rubric. Graders independently evaluated the written exercise, product quantity and...
Integration of Personality into Psychopharmacotherapy Instruction in a Pharmacy Curriculum. David Fuentes, Pacific University, Oregon. Objectives: Current literature in pharmacy education communicates that psychopharmacotherapy course content in pharmacy curricula focuses heavily on depression, schizophrenia, anxiety and bipolar disorders. In order to meet the demands of patients with personality disorders as effective clinicians, it may behoove faculty to integrate these cluster disorders into cases and group activities. Multiaxial cases and group assignments integrating medical co-morbidities, psychiatric and personality disorders, and functional/social stressors were used to increase students’ knowledge of personality disorders. Method: Students read cases in lecture and developed their own patient with instructions to include the 5 psychiatric axes: Axis I (major psychiatric presentation); Axis II (personality or developmental disorder); Axis III (medical diagnoses); Axis IV (functional limitations and stressors); and, Axis V (Global Assessment of Functioning). Results: Students completed a 55-question exam divided into 3 sections integrating: commonly taught psychiatric topics (56%); communication and health literacy (13%); and, personality disorders (31%). Students achieved the average scores of 91%, 93%, and 96% in the areas of common psychiatric topics (i.e. drug therapy, disorders), patient communication and health literacy, and personality disorders, respectively. Additionally, all groups correctly integrated and described personality disorders within their case. Implications: Including personality disorders does not compromise, and may even solidify, learning in a psychopharmacotherapy course. Students may use the knowledge of personality disorders as a base foundation in: their approach to patients; developing their clinical skills; and, meeting the growing challenges today’s pharmacists face in psychiatric practice areas.

Integrating Population Health into a Pharmacotherapy Seminar Course. Jennifer McIntosh, Northeastern University, Michael Gonyeau, Northeastern University. Objectives: Multiple accrediting and advising bodies have recommended or mandated that pharmacy curricula prepare students to address population/public health. Few examples of integrating this material into existing clinical courses exist in the pharmacy literature. We developed population health materials for a Therapeutics seminar and assessed the impact on student’s knowledge and attitudes of population/public health in pharmacy. Method: The NAPLEX blueprint, ACPE accreditation competencies and AACP CAPE outcomes were utilized to develop 7 seminar activities. The added material introduced students to needs assessment, utilization of public health data sources, developing population based interventions and addressing social, economic and cultural determinants of health. Students were surveyed pre and post-intervention to assess attitudes regarding pharmacists’ role in population health. Results: Fifty-one percent (n = 53) students completed both surveys. Both surveys had high levels of agreement regarding pharmacist’s role in improving population health (90.2%, 86.3%) and preventing disease (94.1%, 92.2%). Post-intervention, students reported significant improvement in: 1) assessing population health needs 2) locating and using population health data, 3) identifying and interpreting disease measure within a population, and 4) adjusting medication therapy plans based on health literacy, cultural diversity, and socioeconomic circumstances (p<0.005). There was also a significant change in student’s belief that race and gender affect access and quality of care (p<0.05) which was not true for socioeconomic status. Implications: These results indicate that population/public health materials can be successfully integrated into existing clinical courses. This approach requires students with basic population/public health skills, preceptors with population/public health expertise, and multiple interventions throughout the course.

Integrating a Virtual Patient with Multiple Disease States into a Pharmacotherapy Course. Diane Nykamp, Mercer University, Leisa L. Marshall, Mercer University. Objectives: To study and measure 3rd year pharmacy students’ understanding of patient care by modeling patient analysis and evaluation using a virtual patient case study. Method: Students enrolled in a required pharmacotherapy module were asked to voluntarily complete an eight item questionnaire (pre-test) to self assess their perceptions of their ability to contribute to patient care and evaluate and assess Lupus medication treatment after a didactic lecture of Systemic Lupus Erythematous (SLE). Faculty developed the questionnaire utilizing the institution’s advanced practice experience evaluation form that is used to assess fourth year students’ competencies. After the didactic lecture and pre-test, a simulated patient case using a virtual patient with SLE and Cardiovascular Disease (CVD) was presented. Case discussion involved application of knowledge and skills, presented previously during the didactic lecture, in the evaluation of the patient and medication therapy. Immediately afterwards, students were invited to complete a questionnaire (post-test), which included the pre-test items, plus six additional items. The additional items assessed student perceptions of their ability to provide patient care with the patient case. Results: 125 students out of 149 (83.9%) completed the pre and post tests. Differences between pre and post test results were significant (p< 0.01) for all 8 items. Means for the 6 additional post-test items were 3.99 or above, based on a 5 point Likert scale. Implications: The inclusion of a virtual patient into a classroom setting increased students’ perceptions of their ability to understand and provide patient care.

Inter-facilitator Impact on Student Performance in Case-Based Discussions. Janice Hoffman, Western University of Health Sciences, Cynthia Jackevicius, Western University of Health Sciences. Objectives: To assess for differences in student performance in a case-based discussion based on facilitator assignment. Method: Students in the second year of pharmacy school (P2) during an integrative block have an active learning component of a Comprehensive Case Discussion with four disease states. Students are expected to prepare the case with comprehensive SOAP notes prior to the discussion groups. Discussion groups are randomly assigned students and time slots (morning or afternoon) and consist of 11 students and a faculty facilitator. Students have usual working teams that are different than the discussion teams. Facilitators are given the SOAP notes from content expert faculty and review the keys as a group, for key teaching points for one-hour prior to facilitation of the group. The day following the Comprehensive Case Discussion there is an associated exam to assess student learning. Exam scores were compared in the assigned groups using ANOVA. Mean group scores were compared per facilitator and time of day. Results: There were 136, P2 students who participated in the comprehensive case discussion and exam. The mean exam grade was 84.9% (range 37.6% to 98.7%).
was a significant difference in the exam grades by discussion group (p = 0.04), but not according to usual team assignment (p = 0.09).

Implications: While the scores of students in their usual teams were not significantly different, there was significant variation according to facilitator groups. This difference may impact student performance. Training of facilitators may need to be more specific to overcome this bias.

Kids Eat Healthy: A Pharmacy Student Service Learning Program Providing Nutrition Education to Children. Rebecca A. Faller, Lake Erie College of Osteopathic Medicine, Julie J. Wilkinson, Lake Erie College of Osteopathic Medicine, Sarah Popish, Touro University, Karla Pignotti Dumas, Food and Nutrition Services, Sarasota District Schools, Heather M. Petrelli, Lake Erie College of Osteopathic Medicine. Objectives: The program’s goals are to increase elementary student nutrition knowledge and to enhance pharmacy student communication skills and professionalism. Method: A prospective educational intervention was delivered to grades K through 3 weekly for four weeks. Three lower socioeconomic schools were chosen to receive nutrition lessons developed by school system nutritionists. Pre and post tests were given to elementary students to evaluate their knowledge of basic nutrition information. Pharmacy students were given pre and post surveys to measure their perceived attitudes, skills, and knowledge achieved through the project. Results: A total of 468 elementary students completed the pre/post test, and 96 pharmacy students completed the pre/post survey. Statistically significant improvement was found in all grade levels for food group matching on the knowledge test. The pharmacy student survey showed greater than 90% of students rated achievement of specific objectives as strongly agree or agree. General professional skills were assessed, with “feeling a sense of community responsibility” and “taking responsibility as a healthcare provider” being the most highly rated. Implications: This service learning experience proved to be beneficial for both the elementary and pharmacy students. Enhancing the knowledge of both groups and establishing a positive relationship between the pharmacy school and the community.

Knowledge Retention and Clinical Use of a First-Year Student Pharmacist Diabetes Self-Care Education Program. Melissa D. Neighbors, University of California San Diego, Candis M. Morello, University of California, San Diego, Brookie M. Best, University of California, San Diego. Objectives: Earlier diabetes training of student pharmacists could increase the number of providers caring for people with diabetes, a rapidly growing population. This study evaluated the effectiveness of our comprehensive first-year Diabetes Self-Care Education Program (DSEP) by measuring (1) knowledge obtained and student confidence in providing diabetes education, (2) knowledge retention, and (3) use in clinical practice. Method: Pre/Post/Follow-up surveys, refined by a previous focus group, were administered consecutively during the 1st-year orientation (Pre), at DSEP completion (Post), and at 8 and 20 months later (Follow-up). Questions assessed confidence in overall diabetes self-care, glucose monitors, insulin and foot care, and included two case-based knowledge tests; comparisons were made with repeated measures ANOVA. Results: Fifty-nine, 58, 54 and 51 Class of 2011 students completed the four surveys and 98% had no prior diabetes training. Thirty-seven percent remained very or extremely confident in helping diabetes patients at 20 months, compared to 2% pre-DSEP (p < 0.01). Students retained knowledge, with 79% and 77% correct on Follow-up knowledge tests. Forty-two of 51 (82%) students educated diabetes patients or caregivers since DSEP completion, averaging 78 and 41 assists of patients and caregivers per student, respectively. Common patient education topics were general diabetes information, risk factors, pre-diabetes, diabetes screening, and glucose monitor evaluation. Implications: A comprehensive first-year DSEP increases student pharmacists’ diabetes knowledge and confidence. Most students used this training clinically within their first two years of pharmacy school to assist patients/caregivers, demonstrating that the 1st-year DSEP model may provide additional healthcare professionals to meet the needs of a diabetes epidemic.

Lecture-based Versus Small Group-based Teaching of Diabetes Medical Nutrition Therapy (DM MNT). Jeany K. Jun, Western University of Health Sciences, Eunice P. Chung, Western University of Health Sciences, Emmanuelle Schwartzman, Western University of Health Sciences, David Q. Pham, Western University of Health Sciences. Objectives: To evaluate student knowledge, attitude, and application between lecture-based learning versus small group-based discussion with a trained facilitator Method: Faculty lecturer developed the program for the lecture-based and small group-based diabetes medical nutrition therapy (DM MNT). Second year pharmacy students were randomly divided into two groups. The first group (N = 61) learned by attending a didactic lecture in a large classroom. The second group (N = 64) learned via a small group discussion (groups of eight students) facilitated by a trained faculty, resident, or 4th year pharmacy student. Knowledge was assessed by a pre-test conducted at the start of both sessions. At the end of the sessions, students completed a post-knowledge test and an attitudinal survey. Application of DM MNT knowledge was assessed through an objective structured clinical examination two months later using a case specifically written to test this concept. Results were analyzed using the Student T-test. Results: No significant differences were observed between the two groups for knowledge, attitude or application. Students tended to favor faculty facilitators compared to the resident/student facilitators on the attitudinal survey (3.55 ± 0.18 vs. 3.25 ± 0.20, p = 0.07). Implications: Although there were no differences in outcomes, the small group session was much more labor and resource intensive. For content delivery, lecture-based learning appears to be more efficient. For future designs, revising the program to incorporate more application exercises and having trained faculty leading the sessions may make a difference in outcomes.

Logistics and legalities: Applying Law Class to a Clinical Rotation. Michelle L. Hilaire, University of Wyoming, Kem P. Krueger, University of Wyoming, Tonja M. Woods, University of Wyoming. Objectives: To give P4 rotation students the opportunity to improve practice by applying concepts covered in a didactic law course. Prescribing of controlled substances is not uniformly taught in medical schools, but is expected to be learned on rotations and in residency. The purpose of this project was to evaluate the effectiveness of student led learning activities designed to improve provider knowledge and compliance with state and federal policies related to prescribing controlled substances. Method: The study was approved by the Institutional Review Board. Over a 4 week rotation, pharmacy students developed and implemented activities to provide education to medical residents and staff, accommodating visual, tactile, and auditory learners. Fifteen providers completed pre and post surveys designed to assess their knowledge about legalities of prescribing controlled substances. Compliance with the law was also monitored. Results: Overall, knowledge and compliance regarding prescribing controlled substances increased, as seen with a 40% increase in survey scores after imposed learning activities. The number of calls from pharmacies concerning incorrectly written controlled substance prescriptions has decreased by greater than 50%. Providers also shared learned
Costs were identified as a problem twice as often in encounters than the identified problem was side effects (23% and 33%, respectively). (p = 5.92) problems per patient in CE cases and encounters, respectively and subsequent recommendations were made with t tests. Method: MTBL was incorporated into the Pulmonary Disorders module taken by third-year doctor of pharmacy students. Students were assigned to groups (n=25) of five or six team members. Quizzes that promoted team-building and application of key concepts were created. Students took an individual quiz and then each team took the same quiz using IF-AT. Questions from each quiz were added to each exam (n=3) to assess students’ retention. Long-term retention was defined as one week. At the end of the module, students were asked to complete a survey evaluating their perceptions of the process. Results: Students on average scored 23% higher on team quizzes compared with individual quizzes. The mean difference between the individual scores and the team scores was statistically significant for all quizzes (p<0.001). Retention of the material as judged by the percent of quiz questions answered correctly on the exams (83.8%) compared to individual quizzes (60.0 %) was shown to have a significant change (p<0.001). Approximately 64% of students felt MTBL improved understanding of course material; however only 44% felt teamwork should continue in other modules. Seventy-six percent of students felt that using immediate feedback assessment technique improved understanding of course and 58% felt IF-AT should continue in other modules. Implications: Overall, modified team-based learning improved student quiz scores, was well received by students and increased student retention of information.

Montana PharmAssist Program: Continuing Education Reviews and Patient Encounters—How Does Training Translate into Practice? Katherine S. Hale, The University of Montana, Sherrill J. Brown, The University of Montana, Jean T. Carter, The University of Montana. Objectives: Determine the effectiveness of a continuing education (CE) program for pharmacists who have provided comprehensive medication reviews for the PharmAssist program. Method: Background: The Montana PharmAssist Program contracts with pharmacists to provide comprehensive medication reviews for ambulatory patients to reduce costs and risks of drug interactions while maintaining effective care. One of the contract requirements is the completion of the PharmAssist CE program. Eight of the 28 contracted pharmacists have now had at least one patient encounter. Methods: Identified problems and recommendations for CE cases and patient encounters were reviewed with a standardized assessment tool. Comparisons of the number of identified drug-related problems and subsequent recommendations were made with t tests. Results: Eight contracted pharmacists provided 16 initial patient encounters. These pharmacists identified an average (SD) of 17.8 (2.87) and 10.1 (5.92) problems per patient in CE cases and encounters, respectively (p=0.0003). For both cases and encounters, the most commonly identified problem was side effects (23% and 33%, respectively). Costs were identified as a problem twice as often in encounters than in the CE cases (10% versus 5%). Although costs were rarely identified as a problem, many of the recommendations made in the cases (31%) and encounters (42%) would potentially reduce them. Implications: By comparing problems and recommendations in CE cases with those made for patient encounters, future CE programs will be refined to ensure a focus on the goals of the Montana PharmAssist program such as reducing costs while maintaining effective care.

Order Effect of Laboratory Section on Grades in a Professional Practice Laboratory. Patricia M. Grace, University at Buffalo, The State University of New York, Alfred T. Reiman, University at Buffalo, The State University of New York, Jack Brown, University at Buffalo, The State University of New York. Objectives: To determine if prescription based exercise score differences between three distinct laboratory section groups, for students within the same class, are statistically significant. Method: Students (116) were divided into three groups (1,2,3), with each group assigned to a different laboratory section (A,B,C). Groups did not have the same section for Fall and Spring. Laboratory Section A met first, followed by B and C on different days. The average grade (maximum score = 15) for prescription exercises completed by each student was determined. ANOVA compared grades for the A, B, and C sections within a semester, and matched T tests compared grades within a group of students for the Fall and Spring semesters. Results: There was no statistically significant difference in mean scores by laboratory section for Fall (Section A = 13.76, Section B = 13.78, Section C = 13.82, p = 0.993) or Spring (Section A = 13.79, Section B = 13.82, Section C = 13.96, p = 0.326). There was no statistically significant difference in mean scores for a group of students by semester (Group 1, Fall =13.76, Spring = 13.83, p = 0.559; Group 2, Fall = 13.78, Spring = 13.96, p = 0.123; Group 3, Fall = 13.82, Spring = 13.79, p = 0.660). Implications: In multi section laboratory courses, students in the last section do not have higher scores than students in the first lab section. Students are either not sharing laboratory information with their fellow students, or the information shared is not making a difference.

Pharm.D. Students’ Participation in Faculty’s Research: Benefits and Challenges from Their Perspectives. Nancy Hart, Nova Southeastern University, Nisaratana Sangasubana, Nova Southeastern University, Silvia Rabionet, Nova Southeastern University, Goar Alvarez, Nova Southeastern University, Elizabeth Sizemore, Nova Southeastern University, Lily Wong, Nova Southeastern University, Claire Exaus, Nova Southeastern University, Moe Shwin, Nova Southeastern University, Kimmy Quach, Nova Southeastern University, Genevieve Hale, Nova Southeastern University, Anca Selagea, Nova Southeastern University, Jessica Rodriguez, Nova Southeastern University. Objectives: Participation in faculty’s research activities may increase Pharm.D. students’ self-efficacy and interest in integrating research into professional practice. Students participated in a faculty-led multi-departmental funded research project with two objectives: (1) to develop research skills to understand evidence-based pharmacy practice; (2) to document benefits and challenges of student participation in research. Method: Nova Southeastern University College of Pharmacy students were recruited and interviewed to participate as research assistants in a pharmacist-centered intervention study to increase patients’ knowledge and use of generic OTC medications. Students were selected based on: academic standing, social/communication skills, and understanding of/interest in the research study. After receiving CITI and hands-on research training, they were expected to commit 3-12 hours/week and engage in every research stage: literature searches, study materials design, consent
Pharmacists Assessed for Over-The-Counter (OTC) Best Practice Knowledge in Secret-Shopper Evaluations by Pharmacy Students. Debra Sibbald, University of Toronto. Objectives: Since patients assume optimal OTC choices are available in community settings, pharmacy students evaluated accessible products and pharmacists’ recommendations in province-wide pharmacies. Results: Nine students participated during the study period of December 2008 to February 2010. Three students were able to analyze data and submit research abstracts for presentation. The benefits reported by students included: relationships with faculty, research skills, use of social/communication skills, application to practice, patient interaction, and scholarship opportunities. Challenges included: scheduling conflicts, workload, self-efficacy, and working with the study limitations. Implications: Faculty-led research activities can provide a unique opportunity to engage Pharm.D. students in scholarship, foster student-faculty relationships and cultivate their interest in applying research to pharmacy practice.

Pharmacy Student Acquisition of Pediatric Over-the-Counter Medications or Care Items. Timothy J. Todd, Midwestern University Chicago College of Pharmacy. Jennifer L. Mazan, Midwestern University Chicago College of Pharmacy, Timothy J. Todd, Midwestern University Chicago College of Pharmacy. Objectives: Second-year pharmacy students enrolled in a required communications course participated in a pilot program designed to enhance awareness of national diet and exercise guidelines and to develop empathy for patients who must adopt lifestyle changes and take medication daily. Method: A survey administered at the start and completion of the course assessed knowledge of national diet and exercise guidelines and perception of difficulty complying with these guidelines and with medication regimens. Students retrospectively tracked diet and exercise habits weekly for three weeks. National diet and exercise guidelines were presented and students then adopted the role of patient initiating lifestyle changes and taking medication. Results: There was no improvement in knowledge of guidelines following the intervention. Thirty-nine percent of students correctly identified a dietary guideline pre-intervention and 41% answered the same item correctly post-intervention. Likewise, 62% of students correctly identified exercise guidelines on both the pre and post surveys. Following the program, 28% rated dietary changes as very difficult/impossible; 32% rated increasing exercise as very difficult/impossible. Over 60% of students found medication compliance to be more difficult than anticipated. Eighty-six percent of respondents of an open-ended question valued the program. Implications: The program did not improve student knowledge of national diet and exercise guidelines, but it did increase student empathy regarding lifestyle and medication compliance. The program should remain in the course, but should be modified to better address knowledge deficits.

Pharmacy Student and Preceptor Perceptions of Student Preparedness for the Advanced Pharmacy Practice Experiences. Diane Nykamp, Mercer University, Susan W. Miller, Mercer University. Objectives: To compare pharmacy students and preceptors perceptions regarding how prepared students were to deliver patient care on their first Advanced Pharmacy Practice Experience (APPE). Method: A 56 item questionnaire was developed and distributed to PS1 and PS2 groups when compared to the PS4 group and was significant for only five of the eight categories. Statistical significance was not found when analysis evaluated the impact of gender, dependents, pricing responsibility at workplace, recent purchasing of pediatric over-the-counter products, ethnicity, or age. Implications: Pharmacy student acquisition of pediatric over-the-counter cost awareness appears to be minimal and should be addressed by alterations to the curriculum.
Drug Therapy Assessment, Implementation and Monitoring of Drug Therapy Plans, Communication Abilities, Critical Thinking and Problem Solving Skills, and Self-Learning Abilities. Student assessment of their readiness in the 6 specific areas was compared to preceptor assessment using a 4 point Likert Scale. Results: Ninety six (66%) students and 61 (34%) preceptors responded to the questionnaire. Overall, preceptors believed students were prepared on their first APPE (mean = 3.75 based on 5 point Likert Scale). Students also rated their readiness as prepared (mean = 3.59). Students rated themselves significantly higher than the preceptors on 21 out of 45 items. Non faculty preceptors rated students significantly higher than faculty preceptors on four items: the ability to efficiently perform a medication history or patient interview; knowledge of pharmacotherapy; the ability to assess the need for current or additional medications; and perform a pharmacokinetic monitoring plan. Implications: Preceptors and students believe students are prepared for practice experiences. For the future, didactic training should include additional patient case studies so students will be able to recognize problems when presented to them in the clinical setting.

Pharmacy Students’ Perceived Value of Physical Assessment Instruction by Nursing or Pharmacy Faculty. Scott Boleta, Wilkes University, Dominick P. Trombetta, Wilkes University, Daniel S. Longhore, Wilkes University. Objectives: To compare how physical assessment instruction by pharmacy and nursing faculty affected student satisfaction with instruction and utilization of their skills. Method: All fourth professional year pharmacy students from two consecutive classes were asked to complete an anonymous electronic 16-item questionnaire addressing their physical assessment instruction and utilization of those skills. One class received their instruction from nursing faculty and the other from pharmacy faculty. Categorical variables were analyzed using the chi-square or Fisher exact test, and variables assessed with likert scales were analyzed using an independent-samples t test. Results: Fifty-four students from the class of 2008 and 49 from the class of 2009 completed the survey, for an overall response rate of 76.3%. Significantly more students instructed by pharmacists then nurses indicated they frequently or occasionally performed physical assessment techniques during their advanced pharmacy practice experiences (67.3% vs. 44.4%; p = 0.020), and utilized their skills more frequently during their ambulatory care (93.0% vs. 59.5%; p < 0.001) and community clerkships (40.8% vs. 20.4%; p = 0.024). Students instructed by pharmacists on average rated their instruction (3.45 vs. 2.94; p = 0.002), ability to perform techniques (3.24 vs. 2.72; p < 0.001), and skill comfort levels (3.29 vs. 2.89; p = 0.006) higher, and felt the instruction was more applicable to practice (3.16 vs. 2.65; p = 0.007), than those instructed by nurses. Implications: Physical assessment instruction by pharmacy faculty led to higher student perceived value and utilization of skills compared to nursing faculty instruction.

Pharmacy Students’ Perception Changes with First Exposure to Team-Based Learning in a Medication Use Systems Course. Patrick J. Gallegos, Northeastern Ohio Universities Colleges of Medicine and Pharmacy, Dean X. Parmelee, Wright State College of Medicine, Louis D. Barone, Northeastern Ohio Universities Colleges of Medicine and Pharmacy, Margarita Kokinova, Northeastern Ohio Universities Colleges of Medicine and Pharmacy, Blavin Mistry, Northeastern Ohio Universities Colleges of Medicine and Pharmacy. Objectives: Northeastern Ohio Universities College of Pharmacy has incorporated Team-Based Learning (TBL) pedagogy into the Medication Use Systems Course (MUS) for second year pharmacy students. These students have no prior formal exposure to TBL in the pharmacy curriculum. Various other health disciplines currently apply TBL but limited data is available within pharmacy education. This study utilized a survey instrument, which was developed to evaluate medical student changes in perceptions regarding TBL. Method: The survey instrument was administered twice, on the first day of class and on the last day of class. Sixty-six student survey responses, their team performance scores and their individual course scores were analyzed with SPSS. Wilcoxon nonparametric test was employed to examine differences in student perception of TBL at the beginning and at the conclusion of the course. Descriptive statistics and ANOVA were used to further examine different student perceptions of TBL. Results: There was a statistically significant difference in student overall responses to the survey at the beginning and at the end of the course (p=0.035). No significant differences in demographic characteristics or academic performance were recognized among students with different perception changes of TBL. Implications: Overall, students’ perception of TBL pedagogy improved during this course. The most significant change relates to their understanding that (1) the team always outperforms the individual, (2) peer evaluation motivates students to work harder, and (3) contributions to team performance are judged in a fair way.

Pharmacy Faculty and Student Readiness for Interprofessional Learning at a Large Medical and Health-sciences University. Elena M. Umland, Thomas Jefferson University, Kevin J. Lyons, Thomas Jefferson University, Carolyn Giordano, Thomas Jefferson University. Objectives: Faculty and student readiness for interprofessional education (IPE) is important in successfully implementing an IPE program. This study examines the relationship between pharmacy faculty and student readiness for IPE at a medical and health-sciences University. It compares these results to relationships in medicine, nursing, occupational therapy and physical therapy. Method: At the conclusion of the first year of a two-year longitudinal IPE program, 190 medicine, nursing, OT, pharmacy and PT faculty and 496 students completed the Readiness for Interprofessional Learning Scale (RIPLS). The RIPLS evaluates 3 factors contributing to readiness: 1.) teamwork and collaboration; 2.) professional identity; and 3.) roles and responsibilities. A 5-point Likert scale is used; higher scores are associated with greater readiness. Results: Overall readiness scores of pharmacy faculty and students were high (4.50 and 4.01); these results were higher than those observed in all other disciplines. Pharmacy faculty readiness scores were higher than student’s on all 3 factors. For all other disciplines, faculty readiness was greater than their students as measured in factors 1 and 2; for factor 3, all students scored higher than faculty. Faculty in all disciplines scored lowest on factor 3 (mean range 3.30 to 3.82). Implications: Faculty and student readiness is necessary for successful IPE implementation. High readiness scores as measured by the RIPLS may contribute to the overall successful implementation of a two-year longitudinal IPE program at this university. The results suggest that it would be appropriate to expand the IPE endeavors to include additional student programs and faculty development efforts.

Please Leave Your Cell Phone ON! Using Text Messaging in the Classroom. Eric A. Wombwell, University of Missouri - Kansas City. Objective: To implement an audience response system in a multi-campus classroom for non-graded classroom activities using short message system (SMS) text messaging. To create a more engaged learning environment for multi-campus classrooms. To evaluate student pharmacists’ perception of text messaging as a learning tool within a multi-campus classroom. Method: Seven text messaging polls were embedded into the PowerPoint of a Pharmacotherapy II
lecture. Poll Everywhere live audience polling system was used to create the polls. The lecture was presented directly to 28 students at the “near” campus and broadcasted simultaneously to 85 students at the “far” campus. Students were instructed to use either their cellular phone or laptops (connected to the internet) to respond to polls. Following the lecture a brief eight question survey was made available online for students from both campuses to complete anonymously. Results: 48 students completed the web-based survey following the lecture. 85.4% (41/48) of responding students indicated that their level of engagement was enhanced with the use of text message polls. 95.9% (46/48) of responding students would prefer the use of text message polling in future lectures. Implications: The use of a text messaging response system appears to be a viable tool to improve student engagement in a multi-campus classroom with minimal financial impact on the institution and students.

Putting the cart before the horse?: Early introduction of patient counseling in 1st Year. Emily K. Dornblaser, University of New England, Matthew Lacroix, University of New England, Kenneth L. McCall, University of New England, Wesley R. Zemrak, University of New England. Objectives: To implement and assess an early introduction to patient counseling skills including patient specific OTC product selection and new prescription drug counseling. Method: The Introduction to Pharmacy course conducted in the first professional year dedicated one credit hour to patient communication through a laboratory-learning environment. Beginning the third week of the course students interpreted written and verbal prescriptions and conducted mock patient counseling utilizing a rubric based on the APhA-ASP patient counseling competition evaluation. Additionally, they were introduced to the QuEST/SCHOLAR method of patient assessment and appropriate OTC medication selection. These activities corresponded with desired outcomes of the first year IPPE rotations. Results: All students performed well with an average grade of 94.1% (SD 4.46) in a standardized assessment of patient counseling on a new drug product. Areas of strength included professionalism, confirmation of medical history, avoidance of medical jargon, interpretation of the prescription and review of appropriate administration and storage instructions through open-ended questions. Areas of weakness included identification of clinically important adverse events which was expected given their lack of pharmacotherapy knowledge. Implications: Student self-assessment and preceptor assessment of student performance will be conducted after IPPE rotations. Strengths and weaknesses will be used to refine the curriculum.

Quality of Team Performance Evaluation Using Team-Based Learning in Second Year Pharmacy Students. Patrick J. Gallegos, Northeastern Ohio Universities Colleges of Medicine and Pharmacy, Margarita Kokinova, Northeastern Ohio Universities Colleges of Medicine and Pharmacy, Bhavin Mistry, Northeastern Ohio Universities Colleges of Medicine and Pharmacy, Louis D. Barone, Northeastern Ohio Universities Colleges of Medicine and Pharmacy, Dean X. Parmelee, Wright State College of Medicine. Objectives: Team performance evaluation is critical for continued growth and development of the team. Limited data is available evaluating team performance in pharmacy education. The Medication Use Systems course at Northeastern Ohio Universities College of Pharmacy uses teams via Team-Based Learning (TBL) pedagogy as the primary means of education. This study utilized a survey instrument, which was developed for medical students, to evaluate student team performance perceptions compared to objective scores while using TBL pedagogy. An additional objective was to validate the instrument in a pharmacy education setting. Method: The survey instrument was administered on the last day of class for the Medication Use Systems course. The 66 valid survey responses were analyzed with SPSS. Correlation analysis was performed to examine the relationships between students’ responses to the survey, their group performance score and their individual course grade. Cronbach’s alpha coefficient for internal consistency of the instrument was calculated. Results: Student responses suggested a positive perception of team work across all teams. On a 7-point scale, the average responses varied between 5.43 (1.22) and 6.08 (1.01). No significant correlation was found between student survey responses and group performance as well as course grades. Our current data set provided new evidence for the high internal consistency of the instrument used (Cronbach’s alpha coefficient was 0.949). Implications: The study suggests that, regardless of academic performance, students perceive teamwork positively and provides additional evidence for the reliability of the instrument.

Rural Patients’ Perceptions about Pharmacists’ Roles in the Provision of Health Care. Heidi Eukel, North Dakota State University, Elizabeth Skoy, North Dakota State University, Jeanne E. Frenzel, North Dakota State University. Objectives: To assess perceptions about pharmacists’ roles in the provision of health care in rural communities and to provide fourth year professional pharmacy students the opportunity to perform health screenings. Method: Professional pharmacy students are trained to perform blood pressure, blood glucose and cholesterol screenings through hands-on application in a skills laboratory. Pharmacy students performed health screenings at a farm show including blood pressure, cholesterol and blood glucose screenings. Students were responsible for performing all screenings and educating patients about results. Individuals who received services completed a survey to assess their perceptions regarding pharmacists’ roles in screening services and to gain an understanding of what types of screening services are offered by pharmacists in communities. Results: Eighty three patients completed the survey. Fifty-seven percent of patients’ primary pharmacies currently offer blood pressure screenings, 31% currently offer cholesterol screenings and 28% currently offer blood glucose screenings. Forty-five percent of patients strongly agree pharmacists are qualified to perform blood pressure screenings. Twenty-eight percent strongly agree and 5% disagree that pharmacists are qualified to test their cholesterol. Thirty percent strongly agree and 5% disagree that pharmacists are qualified to measure their glucose. Implications: Perceptions of a pharmacist’s role in screening services may increase understanding of opportunities for pharmacists to provide these services in the future. Upon graduation, professional pharmacy students may take their understanding of rural perceptions and skills gained from providing screening services and implement programs in their future professional practice to increase accessibility of such services to rural communities.

Simulating Ambulatory Care Cases in A Capstone Course Using Background, Assessment, Recommendation, and Follow-up Format. Ryan J. Wargo, Physician’s Inc/Ohio Northern University, Karen L. Kier, Ohio Northern University, Michael J. Rush, Physician’s Inc/Ohio Northern University. Objectives: Student pharmacists need to transition from classroom to clinical setting while on advanced practice rotations (APPEs). This can be a difficult adjustment for those who have limited exposure to case presentations. Preceptors provided feedback that students struggled with formulating a concise assessment/plan when presenting patients. As a result, a preceptor working with faculty developed a concise method utilizing background, assessment, recommendation, and follow-up (BARF). A resident developed four ambulatory care charts for Capstone. Students
Student Perceptions and Confidence with Presenting, Applying of the Capstone curriculum in helping to prepare students for APPEs. Communication skills with cases. This method will continue to be part of the Capstone curriculum in helping to prepare students for APPEs.

Student Perceptions and Confidence with Presenting, Applying and Integrating Three Pharmacy Perspectives in an Interdisciplinary Course. Beth A. Martin, University of Wisconsin-Madison, Jeanine Abrons, Albany College of Pharmacy and Health Sciences.

Objectives: To evaluate the effectiveness of a case-based, interdisciplinary course on student perceptions of pharmacy perspectives (social administrative sciences (SAS), pharmacy practice (PP), pharmaceutical sciences (PS)) and perspective integration in patient care. Student confidence in presenting, applying and integrating pharmacy perspectives was assessed. Method: The course was designed for DPH-1 students as a large lecture, participation-based class using cases to illustrate interdisciplinary perspectives. Upperclassmen were also allowed to register. Automated response technology captured attendance and classroom involvement. Disease-related case discussions were led by respective faculty from each division over two week intervals. Faculty debate and discussion were encouraged. Pre/post semester assessments evaluated research objectives. Bi-weekly, on-line assessments provided formative feedback to faculty. Results: Year 1, 133 students participated in required assessments (62% female; 47% DPH-1s, 6% DPH-2s, and 47% DPH-3s). Pretest (10.75, t (133) = 2.86), t (133) = 2.86, p < .0001 (two-tailed). Upperclassmen taught BARF during Capstone prior to APPEs. After 6 rotations, students found BARF useful on all rotations and 74.6% stated they would continue to use the method. Students reported having < 5 minutes to present 22% of the time. 74.6% reported having increased confidence when talking to providers. Implications: To ease the transition into the clinical setting, the BARF method gives students confidence in their communication skills with cases. This method will continue to be part of the Capstone curriculum in helping to prepare students for APPEs.

Student Attitudes Towards Incorporating Cultural Awareness Activities into a Required First Year Pharmacy Course. Renee M. DeHart, University of Arkansas for Medical Sciences, Mary K. Stewart, University of Arkansas for Medical Sciences, Marianne McCollum, University of Arkansas for Medical Sciences, Cindy D. Stowe, University of Arkansas for Medical Sciences, Stephanie F. Gardner, University of Arkansas for Medical Sciences. Objectives: Some argue that cultural competency training, a strategy promoted for addressing healthcare disparities, often fails to address unconscious stereotypes affecting behavior and decision-making and suggest increasing provider awareness through tools such as the Implicit Association Test [IAT]. Data also suggest that medication errors occur when providers are unfamiliar with diverse cultures. This information supports efforts to increase pharmacy students’ self-awareness and knowledge of health beliefs/behaviors of diverse patient groups. The current project’s purpose was to analyze student viewpoints on two new cultural awareness exercises in a required first-year course.

Method: Students participated in a community panel discussion, the IAT, and a small group discussion. This analysis includes descriptive and qualitative results from an anonymous, voluntary survey of all students (n = 120) completed upon this module’s completion. Results: Eighty-eight students completed the survey (response rate 72%). The sessions were rated as informative (IAT: 35%; community panel: 36%) and relevant to them (IAT and panel: both 49%). Fifty-six percent of students reported the panel provided new information. At least 80% recommended continuing the IAT and panel discussion next year. When asked what they learned, relevant themes were: not all cultures trust medications; cultural competency involves knowing yourself; and discussing treatment options requires understanding others’ backgrounds. To improve the module, 53% recommended either allowing one panelist more time or increasing the overall time spent on the panel discussion. Implications: Most students found the module informative and recommended its continuation. The most common improvement recommended was more time for the panel discussion.

Student Opportunities to Learn about Careers in Academia - Exploring Academic Life - Elective. Jenny A. Van Amburgh, Northeastern University, Michael Gonyeau, Northeastern University. Objectives: To increase student awareness of academic careers and the roles/responsibilities of faculty in the classroom, department,
Students' Performance and Perceptions of Preparedness to Critically Evaluate Primary Literature Articles. Students rated their POP on a 4-point Likert scale ranging from extremely unprepared to extremely prepared. Knowledge assessment was completed concurrently with the survey. Data were compared with Pearson’s correlation, paired t-test, and Student’s t-test. Results: In year one and two 116 (80.5%) and 112 (75%) students consented for participation respectively. The overall POP (mean ± SD) improved from 2.24 ± 0.49 to 2.79 ± 0.48 (p<0.0001) in year one and from 2.30 ± 0.39 to 2.84 ± 0.52 (p<0.0001) in year two. Initial and follow-up knowledge assessments also improved both years (55.6 ± 17.8% to 68.4 ± 18.4% (p<0.001) in year one and 51.6 ± 21.6% to 66.3 ± 19.8% (p<0.001) in year two). In both years, there was a statistically significant correlation between the initial and follow-up knowledge assessment and POP. There were no differences in POP or performance between years one and two. Implications: Students’ POP and performance improved after the focused application activity and POP correlated well with the knowledge assessment utilized. However, perception and performance are not optimal. Repeated incorporation of critical literature evaluation throughout the curriculum may be necessary to improve perception and performance.

Succession Planning in U.S. Pharmacy Schools. Jenny A. Van Amburgh, Northeastern University, Christopher K. Surratt, Duquesne University, James S. Green, Shenandoah University, Randle M. Gal-lucci, The University of Oklahoma, James Colbert, University of California, San Diego, Shara L. Zatopek, University of Houston, Robert A. Blouin, University of North Carolina at Chapel Hill. Objectives: Between the anticipated “baby boomer” retirements and the steady increase in the number of schools/colleges of pharmacy, the Academy is facing a shortage of prepared successors for senior administrative faculty. Succession planning (SP) involves planning for the effective transition of personnel in leadership positions within an organization. Method: The present work sought to describe the state of SP at a sample population of AAPC institutions by obtaining perspectives on the subject from the deans of these institutions via standardized interview instruments. The IRB-approved instruments were utilized with 15 deans; all interview data were blinded and analyzed using analyst triangulation. Results: The large majority of deans responded that some level of SP was desirable and necessary; however, none claimed to have a formal SP structure in place at his or her home institution. The value of structured SP was uniformly recognized, and many saw SP especially useful if a key senior administrator departed unexpectedly. The deans acknowledged that SP could render a promising faculty member an attractive candidate for leadership roles outside of the institution; altruistically, this risk was accepted. This outcome reflected proper mentorship in that the deans wanted to see their protégés advance, and that such cross-fertilization of the Academy was necessary. Implications: Although widely accepted and well-recognized in the corporate and military sectors, SP within pharmacy schools/colleges is neither universally documented nor implemented. While the evidence presented suggests that SP is needed within the Academy, a concerted effort must be made towards implementing its practice.

T.E.A.M. Mississippi: Successful Multidisciplinary Partnerships to Increase Childhood Obesity Awareness in Rural Southern Communities. Kristopher Harrell, The University of Mississippi, Lei-lani Greening, University of Mississippi Medical Center, Annette Low, Central MS Medical Center (formerly UMMC). Objectives:

Students’ Performance and Perceptions of Preparedness to Critically Evaluate Literature: Two Years Experience. Lisa M. Lundquist, Mercer University, Kathryn M. Momary, Mercer University. Objectives: To compare third-year pharmacy students’ performance and perceptions of preparedness (POP) to critically evaluate literature before and after a focused application activity. Method: Students providing informed consent voluntarily completed a survey assessing their POP to critically evaluate literature in a third year course before and after a focused application activity including didactic lecture, active learning, individual review and classroom discussion of primary literature articles. Students rated their POP on a 4-point Likert scale ranging from extremely unprepared to extremely prepared. Knowledge assessment was completed concurrently with the survey. Data were compared with Pearson’s correlation, paired t-test, and Student’s t-test. Results: In year one and two 116 (80.5%) and 112 (75%) students consented for participation respectively. The overall POP (mean ± SD) improved from 2.24 ± 0.49 to 2.79 ± 0.48 (p<0.0001) in year one and from 2.30 ± 0.39 to 2.84 ± 0.52 (p<0.0001) in year two. Initial and follow-up knowledge assessments also improved both years (55.6 ± 17.8% to 68.4 ± 18.4% (p<0.001) in year one and 51.6 ± 21.6% to 66.3 ± 19.8% (p<0.001) in year two). In both years, there was a statistically significant correlation between the initial and follow-up knowledge assessment and POP. There were no differences in POP or performance between years one and two. Implications: Students’ POP and performance improved after the focused application activity and POP correlated well with the knowledge assessment utilized. However, perception and performance are not optimal. Repeated incorporation of critical literature evaluation throughout the curriculum may be necessary to improve perception and performance.
The Impact of a Pharmacy High School Minority Summer Camp on Student’s Interest in Pharmacy. Lakesha M. Butler, Southern Illinois University Edwardsville. Objectives: The Institute of Medicine (IOM) has advocated the increase of minority and culturally competent health care professionals to help eliminate health care disparities. Currently, minority enrollment in health care professional schools is low. Medicine, nursing, and dentistry have implemented programs to raise minority enrollment, but pharmacy lacks published studies. Several professions have found success in high school minority recruitment programs. Our objective was to initiate a high school minority recruitment program as one effort to increase minority interest in pharmacy. Method: The Office of Pharmacy Student Affairs initiated a task force to address the low minority representation. A pharmacy minority recruitment summer camp was designed and hosted during the summer of 2009. Students interacted with pharmacy student mentors and faculty, compounded in the laboratory, and shadowed pharmacists at local pharmacies. A pre and post questionnaire was administered and collected from the students and results were analyzed using paired t-tests. Results: Fourteen high school students participated. Student plans to pursue pharmacy, comfort in the laboratory, confidence in talking about pharmacy, and understanding of pharmacy school admission criteria all significantly increased as a result of the program (p<0.05). Areas for program improvement include providing more pharmacy laboratory experiences, increasing technology use, recruiting from a broader range of schools, building self-confidence, and emphasizing pharmacy knowledge, admissions, and cultural competence. Implications: This summer camp enhanced student interest in and understanding of pharmacy and could be used as a model to increase minority interest in pharmacy programs.

The Value of Using Pharmacy Students to Educate Adolescents Regarding Rx and OTC Misuse. Paul Oesterman, University of Southern Nevada. Objectives: Recent literature demonstrates increased prescription (Rx) and over-the-counter (OTC) drug misuse by adolescents. The objective was to demonstrate the positive impact of pharmacy student presentations to young adolescents regarding Rx and OTC misuse. Method: Consent forms were completed by the parent/guardian of nearly 400 8th grade students. Health teachers administered a 19 question anonymous survey about Drug Misuse to their students, after which pharmacy students presented a 45 minute program. A month after the presentation, the same survey was given to the 8th graders. Data was analyzed to assess the impact/retention of the pharmacy student presentation. Results: The data demonstrated significant increased awareness of the difference between Rx and OTC medications following the presentation, and impact of improper use. (45%–60%) The number reporting that they were taught about the harmful effects of misusing medications, nearly doubled, which was reinforced when questions about specific medications were asked. Data was pooled to provide a demographic balance in age, race, and sex between the 20 classes surveyed. The pharmacy students felt very positive about the community service that was provided. Implications: Informed decision making by adolescents may help reverse the upward trend of Rx and OTC misuse by teens. The use of pharmacy students to promote the benefits of proper medication use should be encouraged, as pharmacy students can provide instruction on misuse symptom recognition, prevention measures, and educate adolescents to make informed decisions regarding appropriate medication use. Future pharmacy students will be provided the opportunity to educate middle school students.

The Use of Technology in a Pharmacokinetics Module: Student Preferences and the Impact on Student Learning. Andrea L. Duchac, University of Wisconsin-Madison, Amy M. Burton, University of Wisconsin - Madison, Karen Kopacek, University of
Use of Social Media for Student Recruitment by US Colleges of Pharmacy. Abby M. Mynatt, University of Kentucky, Jeff J. Cain, University of Kentucky, Stephanie D. Wurth, University of Kentucky, Kelly M. Smith, University of Kentucky. Objectives: The extent to which colleges of pharmacy employ social media is unknown, yet their use is widespread in professional and nonprofessional settings. We assessed program websites to determine: the prevalence of social media tools used by US colleges of pharmacy, the extent to which such tools were used for PharmD student recruitment, the primary content focus of each, and the specific media most often employed.

Method: The website of each accredited PharmD program (www.acpe-accredit.org) in July 2009 was reviewed. The presence of social media tools on each college’s website was noted. The content of those supporting student recruitment was characterized as centering on student details (e.g., application process), institutional features, or the pharmacy profession. Results: Of 113 websites, 24 (21%) utilized social media, most commonly Facebook (20, 83%), followed by YouTube (10, 42%), Twitter (8, 33%) and MySpace (3, 13%). Multiple media applications were noted on 12 (50%) of the websites, with 5 (21%) employing two, 6 (25%) three, and 1 (4%) four applications. While other uses for social media were noted (e.g., alumni/development, 19 [79%]), 23 of the 24 websites used at least one tool for student recruitment. Specific content most commonly focused on student details: 15 (75%) for Facebook, 21 (72%) YouTube videos, 3 (38%) Twitter, and 1 (33%) MySpace. Implications: These findings establish a baseline for subsequent evaluation of social media trends in pharmacy student recruitment. Utility of such tools is an area for future analysis.

Use of a Tablet PC in a Case Based Advanced Therapeutics Course. Sharon See, St. John’s University. Objectives: To determine whether a Tablet PC (TPC) is an acceptable and effective teaching and learning tool in the classroom Method: A TPC was used in a 6th year case studies course where 244 students (4 sections, 10 groups/section) were assigned a case and tasked with writing a care plan. Each group was charged with writing a FARM outline and one was assigned to present. One class period required the group to write their care plan on the TPC which was projected on a screen. The faculty member annotated the case on the TPC during the discussion, allowing the students to participate instead of taking notes. The revised care plan was then emailed to the entire class. In the other class periods, the group wrote their care plans on paper and presented verbally with no visual aid. A pre and post TPC survey was given to students to identify baseline assessments and perceived value of using a TPC in class. Results: Fifty one percent (125/244) of the students responded to the pre-survey. Half of the respondents self-identified themselves as visual learners and felt that note taking interfered with their ability to participate in class discussions. Thirty percent (86/244) responded to the post survey where 87% felt the TPC allowed for student engagement. Seventy two percent of respondents downloaded and used the annotated notes made in class. Implications: The use of the TPC increased student engagement. A TPC was purchased by the clinical pharmacy department to be utilized in other classes.

Using Repeated Measures to Evaluate Differences in Student Academic Performance between Campuses. Kimberly H. Deloatch, University of North Carolina at Chapel Hill, Yinchen Wang, University of North Carolina at Chapel Hill. Objectives: To determine whether significant academic performance differences exist between
PharmD students on the Chapel Hill and Elizabeth City State University campuses, using synchronous video-teleconference as the primary instructional delivery model, and to assess the influence of student entry characteristics on apparent differences. **Method:** Repeated measures analysis was chosen to detect academic differences between campuses in a dual-campus program. This method is used to model the correlation structure when multiple measures are performed within the same group of subjects over time. Two separate analyses were performed—one with and the other without covariates. Dependent variables included Semester GPA, Objective Structured Clinical Exam (OSCE) scores and pre-experiential (capstone) exam scores. Independent variables included: entry GPA, Pharmacy College Admission Test (PCAT) scores, and pre-pharmacy institution quality ratings based on mean SAT math and verbal scores and admission difficulty rankings for the primary pre-pharmacy institution. Grouping variables included campus and gender. **Results:** Analysis revealed high correlations among pre-pharmacy institution quality measures (Pearson correlation > 0.90). To reduce the redundancy, principal component analysis (PCA) was performed. The first component extracted at least 76% of variance. Subsequent analyses were performed using the extracted component. The results from repeated measures with and without covariates showed that the differences between the campuses are explained by the students’ entry characteristics. With covariates, no cohorts showed statistically significant performance differences between campuses (p-value > .30) **Implications:** Student entry characteristics explained the differences between the campuses, suggesting that comparable academic outcomes can be achieved through this satellite campus model.

**Utilization of Pharmacy Residents as Pharmacotherapeutics Case Study Coordinators.** Keith J. Christensen, Creighton University, Amy Pick, Creighton University. **Objectives:** To describe the use of pharmacy residents as case study coordinators in a 3rd year pharmacotherapeutics course and compare grading outcomes to previous year faculty. **Method:** One-hundred nine campus-based pharmacy students participate in case studies within a Therapeutics course. Each week, students attend a three-hour lab. Students are divided into two different days of the week (55 students each) and then into two separate groups in different rooms (27-28 students each). In spring 2008, four full-time faculty served as case coordinators responsible for grading 2 presentations (20 points each) and 4 assists (question-answer sessions each 2.5 points) per student. To decrease workload, four pharmacy practice residents were substituted for the faculty members in the spring 2009. Overall grades for the spring semesters were compared for equality, each using the same standard grading rubric. The student population was different, however, the topics were the same between semesters. Mean overall scores including the answer key was developed in rubric format. In this new exam format, pairs of faculty developed the answer key for the exam. Previously, all faculty graded the exam regardless of the authors. This led to inconsistent and inefficient grading despite a rubric. In this new exam format, pairs of faculty developed the answer key. Eighty faculty members graded the exams with two faculty assigned to the exam each week. The exam was open-book and case-based to follow the same processes that were performed during the semester. All topics were eligible for the exam. Previously, all faculty graded the exam regardless of the authors. This led to inconsistent and inefficient grading despite a rubric. In this new exam format, pairs of faculty developed the answer key. Eighty faculty members graded the exams with two faculty assigned to the exam they authored. Each faculty graded approximately 30 exams. **Implications:** Assessing pharmaceutical care planning skills in an exam in a timely manner is feasible in a large class with multiple faculty.

**Utilizing a Health Literacy-centered Process to Develop Warfarin Patient Education Materials.** Karyn M. Sullivan, Massachusetts College of Pharmacy and Health Sciences-Worcester, Monina R. Lahoz, Massachusetts College of Pharmacy and Health Sciences-Worcester, George Abraham, Saint Vincent Hospital, Kristin Tuiskula, Massachusetts College of Pharmacy and Health Sciences-Worcester. **Objectives:** National Patient Safety Goal (NPSG) 03.05.01 includes a patient education component for those receiving anticoagulants including warfarin. At our institution, we found that our warfarin patient education material was focused solely on dietary precautions and had not been assessed for health literacy. The objectives of this project were to (1) conduct a health literacy assessment of the currently available material, (2) revise and re-assess it for health literacy and content to ensure it meets NPSG expectations, and (3) pilot-test the revised material to solicit end-user feedback. **Method:** A new warfarin patient education pamphlet was produced that included key NPSG content. Health literacy assessment of the original and new patient education materials was conducted. Suitability was assessed using the Suitability Assessment of Materials (SAM) instrument. Readability was assessed using the Fry Formula and Flesch-Kincaid Grade Level program. The new pamphlet was pilot-tested on a convenience sample of 10 inpatients. **Results:** The new version scored better than the original on the SAM: 67.2%±5.9 vs. 43.5%±13.8; SAM percentage ratings for both fell in the “adequate” category. Readability scores indicated that the new version read at a lower grade level than the original: Fry Formula - Grade 4 vs. 11; Flesch-Kincaid - Grade 6.9 vs. 9.8. End-user feedback resulted in further revision to the new pamphlet in the areas of diet, dosing, and alcohol consumption. **Implications:** Data suggest that while the health literacy assessment scores of the revised pamphlet were better than the original version, there is room for further improvement.

**Theoretical Models**

**A Novel Team Based Examination in a Large Case Based Therapeutics Course.** Sharon See, St. John’s University, Damary Torres, St. John’s University, Regina Ginzburg, St. John’s University, Olga Hilas, St. John’s University, Michael S. Torre, St. John’s University, Joseph M. Brocavich, St. John’s University. **Objectives:** To design a final examination for a large class that assesses the process of pharmaceutical care planning of various disease states. **Method:** This large 6th year case studies course (n=244, 4 sections) is a patient case-based interactive learning experience designed to strengthen the students’ ability to provide pharmaceutical care. During the class, students are divided into groups, assigned a patient case and tasked with writing care plans using the FARM (findings, assessment, recommendation, monitoring) format to present to the class for discussion. The exam was open-book and case-based to follow the same processes that were performed during the semester. All topics were eligible for the exam. Previously, all faculty graded the exam regardless of the authors. This led to inconsistent and inefficient grading despite a rubric. In this new exam format, pairs of faculty developed the answer key. Eighty faculty members graded the exams with two faculty assigned to the exam they authored. Each faculty graded approximately 30 exams. **Implications:** Assessing pharmaceutical care planning skills in an exam in a timely manner is feasible in a large class with multiple faculty.
total course credits was devoted to a laboratory-learning environment that included several different exercises designed to expand upon effective communication and patient counseling. Utilization of a five station OSCE is a novel approach to assessment of student’s learning during this early experience compared with other colleges and schools of pharmacy. The exercises evaluated by the OSCE included: written and oral prescription interpretation, medication and device counseling, patient assessment using the QuESt/SCHOLAR assessment method, and selection of appropriate over the counter recommendations. This method of assessment would identify skill areas that should be emphasized during IPPE experiences. Results: All 98 students successfully completed the OSCE with an average grade of 91.1% (SD 5.61). Students scored highest on the patient counseling, device counseling, prescription interpretation, and dose calculation. As expected, students struggled with the QuESt/SCHOLAR OTC portion of the examination as this experience relies on therapeutic and patient assessment knowledge. This aspect was identified to be a focus point for the IPPE experiences. Implications: Further research will be conducted by way of follow-up surveys of the students in order to evaluate student perspective on early introduction of these key Pharmacist skills. Surveys will be distributed and evaluated following the completion of IPPE rotations between the first and second professional years. This information will be used to tailor the course and identify areas for improvement.

Designing an Elective Course by Beginning with the End in Mind. Laura M. Borgelt, University of Colorado Denver, Scott Murphy, Jefferson County Schools. Objectives: Many pharmacy courses are content-driven and outcomes are developed from course material. The objective of this educational endeavor was to create a women’s health elective course that began with the development of course outcomes to implement the most effective, diverse, and innovative learning strategies. Method: First, final course outcomes were determined prior to the development of any course content. Second, these outcomes were mapped to school-wide curricular abilities-based outcomes. Finally, learning activities and course content were designed to best meet school outcomes and course goals. Results: Course outcomes that were mapped to school outcomes included improved knowledge base; advanced critical thinking, decision making, and application skills; enhanced communication skills; improved ability to access appropriate resources; lifelong learning; and further development of professional conduct and integrity. The learning strategies that were implemented included patient interviews, personal diaries, media observations, patient panels, “jigsaw” for peer teaching and learning, expert speakers, debate, small group discussions, and a final project including a presentation or product to be provided to the community. Active learning occurred in every class session. Knowledge was assessed using quizzes. Abilities-based outcomes were assessed using rubrics for written reflections; student presentations; peer, self, and faculty assessments; and participation in focused conversations. Assessment rubrics were specifically designed based on course outcomes. Implications: By beginning with the end in mind, optimal learning environments with innovative learning strategies and active engagement can be created to successfully achieve school outcomes and course goals. Furthermore, assessment of effective and purposeful learning can be captured with outcome-driven rubrics.

Developing a Community-based Public Health-oriented Practicum for Pharmacy Students through Collaboration between Community and Academic Stakeholders. Rabia Tahir, Touro College of Pharmacy-New York. Objectives: Through research, education, and service, effective collaborations of community, academic, and public health stakeholders can be developed that explore ways to improve the health and wellbeing of a community. Within pharmacy education, these collaborations can provide students the opportunity to promote health and wellbeing in their community and also to advocate for the pharmacy professions. Method: Touro College of Pharmacy (TCP) trains pharmacy students with a public health focus in Harlem, NY. Harlem Health Promotion Center (HHPC), a prevention research center funded by the Centers for Disease Control and Prevention, is a collaboration of community, academic and public health stakeholders which uses research, education, and service to improve the health and well being of the community in Harlem, NY. An initial practice experience for TCP students at HHPC allows for the development of this partnership. Results: This partnership has lead pharmacy faculty and HHPC staff to develop an innovative public-health practice experience for pharmacy students. TCP and HHPC are working together to provide accurate, culturally and locally relevant health information on a community website, GetHealthyHarlem.org. This dynamic partnership has allowed TCP and HHPC to reach the Harlem community as a whole to improve public health and health literacy. Implications: The presentation of this collaboration can aid in understanding the nature of interdisciplinary opportunities available when colleges of pharmacy partner with community based organizations.

Development of Online Documentation for Introductory Pharmacy Practice Experience (IPPE). Ahmed Abdelmaged, Husson University. Objectives: To describe the development of online documentation for IPPE using E*ValueTM. Method: E*ValueTM is a web-based system developed to help manage, collect, and analyze the overwhelming amount of information associated with experiential education. Husson University School of Pharmacy utilizes E*ValueTM for IPPE documentation. The online system enables pharmacy students to find information on the preceptor and site prior to rotation start, verify hours, upload assignments and write journal entries during rotation, and evaluate both site and preceptor at the conclusion of rotation. Preceptors are also able to view information on students who are assigned to their sites, verify their logged hours and evaluate the students’ performance at the conclusion of rotation. All course materials for the IPPE are downloadable by the students and preceptors from E*ValueTM. Training sessions were conducted early during the semester and instruction manuals specific to the users (students and preceptors) were provided. Results: E*ValueTM was instrumental in efficiently managing the first IPPE during the J-Term (Dec-Jan) in 2009-2010. Students were able to submit their course material remotely while on rotation and continue to use the journaling functions. Preceptors completed the students’ evaluations with ease and in a timely manner. Implications: Using E*ValueTM is an efficient and organized way to manage and maintain pharmacy students’ IPPE documentations and portfolio requirements. The system allows information to be delivered in a timely manner and adapt to last minute changes.

Development of an Introductory Course for the Profession of Pharmacy and Introductory Pharmacy Experiences. Matthew Lacroix, University of New England, Kenneth L. McCall, University of New England, Emily Dornblaser, University of New England, Wesley R. Zemrak, University of New England. Objectives: To develop a first year course that both introduced students to the profession of pharmacy as well as prepares students for the completion of IPPEs. Method: Class syllabi from several colleges of pharmacy were compiled to compare objectives and teaching methods. There
was a review of the IPPE expectations and skills that would be necessary to satisfactorily complete the experiences. Members of the faculty involved in the course were consulted as to what they thought was important to the introductory experience and what they thought should be included. **Results:** Based on the skills and information required to complete the IPPE experiences it was felt that an earlier introduction to patient counseling was required then found in other curricula. The result was a 15 week 3 credit hour (45 contact hour) class with 1 credit hour was dedicated to the profession of pharmacy, 1 credit hour dedicated to medical terminology, and 1 credit hour was dedicated to pharmacy ethics and patient Interaction skills. **Implications:** The class development will lead to further scholarly study as to the effectiveness of teaching students at an early stage in their professional development patient communication skills. We will be conducting follow up evaluations at the completion of the first IPPE to see if students felt the skills needed were covered and taught effectively to prepare them for IPPEs.

**Disaster Preparedness, an Interprofessional Simulated Experience.** Chrystian R. Pereira, University of Minnesota, Jane Miller, University of Minnesota, Don Uden, University of Minnesota. **Objectives:** To identify best practices in emergency preparedness training and metrics for measuring effectiveness and efficiency in training public health preparedness. **Method:** Simulation center and emergency medicine faculty developed the curriculum. A collaborative faculty work group from medicine, nursing, dentistry and pharmacy provided feedback on the relevance of the workshop’s goals and content. The curriculum included online and on-site disaster response education. The disaster was a structural collapse following a simulated explosion. Over 30 standardized patients and 5 computerized mannequins served as victims. Interprofessional student teams acted as response units. The student teams had three opportunities to improve performance as the disaster evolved. Following each scenario, trained evaluators representing all professions - as well as first responders - provided immediate feedback. Student teams were evaluated on individual skills in triage, evacuation, communication, and teamwork. Each team response was video recorded. **Results:** Students from dentistry-8, medicine-5, nursing-8, and pharmacy-9 participated. Fourth year pharmacy students participated. Pharmacy student survey scores evaluating performance improvement were similar to other students. Pharmacy students rated 4 on a 5-point scale for feeling prepared in case of an actual emergency and 4.77 on their satisfaction with the experience. **Implications:** This simulation prepares students for a public health disaster and could be included in pharmacy curricula. Disaster 101 combines emergency preparedness education while developing interprofessional teamwork. Funded by the CDC, Disaster 101, is a pilot interprofessional initiative to improve health science student disaster preparedness.

**Examining the Effectiveness of an Elective Course for PY-3 Students Based on PGY-1 Resident Self-Assessment.** Nicole A. Marcotullio, Duquesne University, Marianne E. Koenig, Duquesne University. **Objectives:** The intent of this research is to evaluate the effectiveness of an educational model; a course taught based upon topics designed by graduates from the Duquesne University Mylan School of Pharmacy who are currently completing a PGY-1 residency. The course will be case based and concentrate on organ systems and laboratory value interpretation with topics common to the acute care setting. **Method:** During the elective course students will be administered a pre and post self-assessment survey to measure their knowledge in the course content and a comparison of their perception and knowledge of the PGY-1 residency R2 educational outcome “Provide evidence-based, patient-centered medication therapy management with interdisciplinary teams.” The 2012 graduates who have accepted a PGY-1 residency position, will be surveyed through a self-assessment evaluation nine months after the start of their residency. They will be differentiated and compared based on whether they participated in the elective course, “participants” versus “nonparticipants.” **Results:** The survey will measure their perceived preparedness for their PGY-1 residency and results will be compared on their participation in the course. The survey results will be analyzed through descriptive statistics (means, standard deviations, and percentages) and continuous variables analyzed through t-test and categorical variables through Fisher’s exact test, and course content for the following year will be adjusted based on survey results. **Implications:** The intent of this course is to enhance student’s proficiency with specific patient centered care topics and aid with the transformation from the role as a student to a clinician.

**Incorporating Student Centered Active Learning Strategies into an Applied Patient Care Laboratory Setting.** Jennifer D. Robinson, Washington State University, Susan M. Stein, Pacific University Oregon, Linda G. MacLean, Washington State University. **Objectives:** To describe the development and implementation of active learning and assessment strategies in an applied patient care laboratory setting. **Method:** A teaching learning seminar was presented to junior faculty at Washington State University. The seminar was designed to model and promote the use active learning pedagogy, quick assessments, and group discussion. The faculty members were then challenged to look at their courses and make changes they deemed appropriate. The Applied Patient Care Laboratory III was modified to incorporate more student centered active learning strategies and quick assessments. **Results:** The changes made within the Applied Patient Care Laboratory III course had immediate positive effects on student participation and the level of learning measured through quick assessments. Active learning allowed the student pharmacists to apply knowledge learned in other courses and determine where they had educational gaps that needed to be addressed. Struggling student pharmacists were easily identified which allowed for quick remediation before too much time had passed. **Implications:** Too often we focus on transmitting facts to students and assume they know how to integrate those facts into practice. Through the use of various active learning techniques, student pharmacists are allowed to apply their knowledge in a safe environment.

**LECOM Master of Science in Medical Education.** Hershey S. Bell, Lake Erie College of Osteopathic Medicine, Julie J. Wilkinson, Lake Erie College of Osteopathic Medicine, Mark Terrell, Lake Erie College of Osteopathic Medicine. **Objectives:** In 2005, Lake Erie College of Osteopathic Medicine began the Master of Science in Medical Education program in order to further its strategic goal of producing exceptional educators for the health care professions. The 32 credit-hour program is based on the twin pillars of quality and safety in health care and evidence-based pedagogy. **Method:** Candidates participate in three core components: 1) the foundations of education including an examination of pedagogy, clinical teaching, leadership and administration; 2) on-going educational practicum experiences; and 3) the creation of a “grant-ready” curriculum project. The program is offered online allowing participation among faculty and practitioners from distant locations and it is scheduled to accommodate working professionals. **Results:** Over 60 students have enrolled from a wide array of health professions including pharmacy, medicine (osteopathic and allopathic), podiatry and physician assistant programs. Data will be provided on outcome assessment including
measures of student satisfaction and perceived relevance, cataloging of curriculum projects (e.g. teaching certificate program for pharmacy residents and pharmacists interventions in HIV clinics), and follow-up of graduates to determine if the program has stimulated careers in health professions education. **Implications:** Potential implications for pharmacy education include the provision of an organized and credentialed approach to faculty development activities that faculty currently partake in a more random fashion. The focus is clinical education with particular utility for experiential settings (IPPE and APPE) and residency training. It elevates the status and quality of scholarship devoted to teaching and learning and addresses leadership development among academicians and clinician-educators.

**Participant Impressions of Multiple Mini-Interview (MMI) Use in Interviewing Student Applicants.** David R. Clark, Regis University, Allana J. Sucher, Regis University, Rebecca D. Moote, Regis University, Jodie Malhotra, Regis University, Mary Hajner, Regis University, Susan M. Paulsen, Regis University. **Objectives:** Multiple, short focused interviews have been shown to provide a reliable assessment of cognitive and non-cognitive characteristics of student applicants as well as minimize the chance of interviewer bias. Based upon this data, faculty chose to use the multiple mini-interview (MMI) method to select classes 2013 and 2014. **Method:** MMI scenarios were developed in eight areas: leadership, stress management, creative thinking, communication, empathy, ethics, cultural awareness, and moral cognitive development. During the MMI, each applicant interacted with eight different interviewers, each with a different scenario. For each MMI, the student was given two minutes to read and reflect on the scenario before a six minute discussion with the interviewer. The interviewer then evaluated the applicant using a rubric developed for the respective scenario. At the end of the interview process, each applicant and interviewer completed an exit survey assessing their impressions of the MMI process. **Results:** On a scale of 1 (definitely not) to 7 (definitely), students felt they accurately represented themselves (5.96, SD 1.28) and that they preferred the MMI over a single interview (6.31, SD 1.25). Similarly, interviewers felt they developed an accurate impression of the applicants (5.78, SD 1.44) and found the experience positive (6.91, SD 0.42). **Implications:** Since both interviewees and interviewers felt that the MMI provided an accurate representation of the applicant, the School of Pharmacy could select student applicants for admission based on cognitive and non-cognitive qualities. Applicants matriculating into the program will be assessed regarding these qualities and their academic progression.

**Pharmacists in Community Service (PICS): Assessing the Direct and Indirect Impact of PICS.** Jennifer A. Campbell, Appalachian College of Pharmacy, Vonda K. Vandyke-Swartz, Appalachian College of Pharmacy. **Objectives:** The Pharmacist in Community Service (PICS) program is designed to actively engage students in service projects that support the College’s mission to promote community service, lifelong learning and service to underserved and rural communities. **Method:** The PICS program is a mandatory part of the Appalachian College of Pharmacy Doctor of Pharmacy (PharmD) program and requires all students to complete 150 hours of community service over their three year enrollment in the PharmD program. All PICS activities fall into one of three categories: Health-Related Patient Care, Health-Related Non-patient Care and General Service. **Results:** Students are required to complete PICS hours submission forms for each activity they complete. These forms are used to gather data on not only the categories and duration of activities completed, but a brief description of the services provided and the number of direct person contacts which occurred during the activities. **Implications:** As this is a permanent part of the PharmD program and a requirement for all students, we are continually gathering data to assess the different aspects of the PICS program using a Professional Learning Community (PLC) and informal and formal student and faculty feedback. The effect the students are having on the community is evident for anyone who has the opportunity to watch them in action. As we work to enhance the assessment of both the direct and indirect impact of the PICS program on the students and the community we are better evaluating the program’s significance and determining the transferability to other colleges of pharmacy.

**Pharmacy Students in the Emergency Department: a Different Approach to Medication Reconciliation.** Rayanne A. Story, Harding University, Jean Anne Mire, Harding University. **Objectives:** Medication reconciliation is sometimes difficult in a busy emergency department. Patients may be distracted or confused upon arrival and therefore unable to give a complete and accurate list of their current medications. Although there is no dedicated clinical pharmacist in the ED, pharmacy services are available within the hospital nineteen hours daily. Currently, the nursing staff performs medication reconciliation. **Method:** This presentation describes a demonstration project designed to use pharmacy students from Harding University College of Pharmacy, supervised by a pharmacy practice faculty member, to provide medication reconciliation services to the WCMI emergency department. The team gathers all information about the patient’s medication history, including prescriptions, herbal products and over the counter medications, and asks about their use of patches, inhalers, vaccines and other often-overlooked items. The team inquires about the patient’s drug allergies. The team also uses the patient visit as an opportunity to teach patients about their medications and offer a medication wallet card. **Results:** The medication reconciliation team, comprised of a supervising pharmacist and second year student is gaining popularity in the ED at WCMI. Results to date indicate that properly trained and supervised second year pharmacy students are capable of performing accurate medication reconciliation. We plan to train additional pharmacy students to perform medication reconciliation in the ED, supervised onsite by a clinical pharmacist. **Implications:** Using students to perform medication reconciliation allows the supervising pharmacist to pursue other goals, such as antibiotic surveillance, responding to request for dosing consultations, providing drug information and participating in code blue situations.

**Reexamining the Student Teacher Model through PGY-1 Resident Self Assessment and Course Design.** Marianne E. Koenig, Duquesne University, Nicole A. Marcotullio, Duquesne University. **Objectives:** The intent of this research is to design a pharmacy elective course based upon post graduate year one (PGY-1) resident’s self-assessment of their preparedness for post-graduate training in relation to knowledge acquired through a professional pharmacy degree program. **Method:** A survey will be administered to the 2009 graduates prior to the completion of their PGY-1 General Pharmacy Practice residency. This survey will measure the resident’s perceived preparation to accomplish their PGY-1 R2 educational objective “Provide evidence-based, patient-centered medication therapy management with interdisciplinary teams.” The survey results will be analyzed through descriptive statistics (means, standard deviations, and percentages) and continuous variables analyzed through t-test and categorical variables through Fisher’s exact test. **Results:** The outcomes of this survey shall be the outline for the goals and objectives of the syllabus for an elective course offered to PY3 students’
Using Team-Based Learning (TBL) to Deliver the APhA Pharmacy-Based Immunization. Jodie Malhotra, Regis University, Michael H. Nelson, Regis University, David R. Clark, Regis University. Objectives: The APhA Pharmacy-Based Immunization Delivery program is being used in pharmacy schools across the country. Since the majority ofRegis University, Rueckert-Hartman College for Health Profession, School of Pharmacy’s curriculum is delivered using TBL, to remain consistent, the structure of the immunization program was modified to fit a TBL format. Method: Traditionally, the immunization program requires students to complete the self-study with exam prior to the live session (eight hours of lecture slides and a final exam). This structure was modified to a TBL format delivered over five classes. Pre-reading was assigned for each class consisting of sections from the self-study and selected slides from the live seminar. The readiness assurance tests (questions from the self-study exam) were administered during three classes and completed in teams. Remaining class time was used to complete application exercises designed to emphasize the material covered in the pre-reading. Applications included case scenarios and posters developed by teams focusing on establishing a pharmacy-based immunization program in the community. Posters included the importance of vaccines, pharmacist role, and ways to promote their program in the community. The final class included injection technique and a final exam. Results: Mean scores on the self-study and final exams were 87% and 90% respectively. All students passed the injection technique. Overall quality of the program was rated 4.36 out of 5 on the seminar evaluation. Implications: Using TBL to deliver the APhA Pharmacy-Based Immunization Delivery training course is a highly interactive alternative to the traditional lecture-based design.

Utilization of an Automated Medication Storage Device (AutoCarousel™) to Educate Students About Pharmacy Workflow. William Maidhof, St. John’s University, Felicia Carvalho, St. John’s University. Objectives: In January 2009, St. John’s University College of Pharmacy and Allied Health Professions received the donation of an AutoCarousel™ dispensing unit equipped with AutoPharm™ software from Talyst Inc™. To familiarize students with basic institutional pharmacy workflow, as well as the technology that is utilized to streamline this workflow process while enhancing patient safety, second and third professional year students will enter orders for parenteral products utilizing this technology. Method: The AutoCarousel™ is located in the Compounding Laboratory where second and third professional year students will be debriefed on the hardware’s capabilities and anticipated use in the laboratory. During assigned laboratory periods, students will utilize AutoPharm software to process parenteral orders and then retrieve the necessary products from the AutoCarousel™. Results: At the conclusion of the laboratory, a blinded survey approved by the University’s IRB committee will be given to students. An initial email that will contain the instructions on how to complete the survey and a link to access the survey will be sent to all students. A follow-up reminder email will also be sent. Survey questions will allow for a variety of response types, such as multiple choice, yes/no, and free form answers. Implications: As part of their Advanced Pharmacy Practice Experiences (APPE’s), pharmacy students will be exposed to a variety of workflow hardware and software in the institutional setting. It is anticipated inclusion of the AutoCarousel™ in the Compounding Laboratory curricula will help students understand pharmacy workflow and how utilizing innovative technology can help increase patient safety.

Utilizing Video Vignettes to Teach Self-Care in a Pharmacy Practice Laboratory. Emily M. Ambizas, St. John’s University, William Maidhof, St. John’s University, Nissa Mazzola, St. John’s University, Joseph M. Brocavich, St. John’s University. Objectives: To illustrate the pharmacist-patient interaction during a self-care evaluation utilizing video vignettes in an integrated, interactive pharmacy practice laboratory. Method: As part of the assessment/simulation sessions of our pharmacy practice laboratory, students participate in patient assessment instruction and role-playing of patient/prescriber and pharmacy intern by our faculty and students respectively. During the first laboratory session students are given an introduction to non-prescription medications, self-care and herbas, as well as an introduction to patient assessment and triage. In following sessions, video vignettes have been incorporated to illustrate the pharmacist-patient interaction during a self-care evaluation. Results: Students are required to read select chapters in the Handbook of Nonprescription Drugs. Scenarios are developed by faculty, simulated, and recorded. While viewing the vignette, the student completes a worksheet documenting patient information and an assessment of the chief complaint. The student must justify the recommendation or provide a more appropriate therapeutic plan. As they progress in the laboratory, they are required to provide their own recommendation as well as their justification. Implications: The use of video vignettes in a pharmacy practice laboratory has proven to be a useful tool in the instruction of self-care. Students are acclimated to the process slowly. Initial simulations are complete and students are expected to evaluate the interaction. Subsequent simulations require students to take a more active role until they are expected to complete an entire assessment without assistance. This process allows the student to view how to correctly assess and triage a patient prior to participating in the interaction independently.

Work in Progress

A 12 Week Integrated Ambulatory Care and Internal Medicine APPE. Michael Gonyeau, Northeastern University. Maureen McQueeney, Northeastern University. Objectives: Reports from AACP and ACCP state that to ensure quality experiences, educators are encouraged to actively involve students in patient-centered care, support preceptor development and focus education on development of skills, attitudes and values. Our objectives were to describe and discuss the development of an integrated APPE model, identify barriers to implementation and value added to students, preceptors and institutions, and to assess student attitudes regarding the integrated APPE. Method: A 6 week ambulatory care and 6 week internal medicine APPE were integrated into a 12 week APPE where students were required to transition from inpatient to outpatient services within the same day and sign-out responsibilities to one another in such transitions similar to the medical model. Students were given exposure to the continuum of care experienced by patients by providing pharmacy services to patients beginning while in the hospital.
and continuing with outpatient care at follow-up appointments for patients in the ambulatory care clinic. Student responsibilities included medication reconciliation, provision of drug information, therapeutic drug monitoring and discharge counseling. Potential benefits over traditional APPEs include: decreased orientation time, greater breadth of disease state exposure, and stronger relationship development with patients, healthcare providers, preceptors and peers. Results: Twelve students will have completed the integrated APPE and post-APPE survey results evaluating students’ attitudes and perceived benefits of learning with this model will be presented. Implications: This study hopes to demonstrate the benefits of a 12 week integrated APPE on students’ learning and attitudes. It will serve as model for others considering this approach.

A Case-based Interprofessional Education Experience between Pharmacy and Physician Assistant Students. Karla T. Foster, Mercer University, Patricia J. Kelly, Mercer University, Gina J. Ryan, Mercer University. Objectives: The Accreditation Council for Pharmacy Education encourages implementation of Interprofessional Education (IPE) into the curriculum of pharmacy schools. The study objectives were to assess student attitudes towards interprofessional teamwork and to assess student disease-state knowledge after completion of a case-based IPE experience. Method: In November 2009, pharmacy and physician assistant (PA) students completed patient cases on disease states covered in the pharmacy and PA curricula. Students completed a pretest and a post test attitudinal survey based on the Readiness for Interprofessional Learning Scale (RIPLS) to assess attitudes towards interprofessional teamwork. A Likert scale survey was used where 5 = strongly agree and 1 = strongly disagree. Students also completed a multiple choice pretest and post test to assess student knowledge after the IPE experience. Results: The response rate on the attitudinal survey was 89% (N = 106). Student ratings on the influence of IPE on their effectiveness on a healthcare team increased from 4.61 ± 0.551 on the pretest to 4.71 ± 0.521 on the post test (P < 0.05). Ratings on the importance of shared learning to clarify the nature of patient problems increased from 4.34 ± 0.68 on the pretest to 4.52 ± 0.69 on the post test (P < 0.05). The response rate on the multiple choice test was 85% (N = 106). Mean scores were 57.18 ± 15.47 on the pretest and 69.8 ± 13.75 on the post test (P < 0.05). Implications: Preliminary data suggests that participation in an IPE experience improved student knowledge. Additional attitudinal survey items are being analyzed and will be used to assess student readiness for interprofessional teamwork.

A Dual Immersive Technology Course Using Online Learning and Simulation Based Learning. Amy L. Seybert, University of Pittsburgh, Sandra L. Kane-Gill, University of Pittsburgh. Objectives: To improve clinical decision making skills of pharmacy students using online learning partnered with simulation based learning. Method: The Acute Care Simulation elective (3 credits) is offered in the third professional year. Online video modules of 10-15 minute duration containing various critical care/cardiovascular pharmacotherapy topics are provided. Students are required to watch 3-4 online modules prior to contact time. Contact time includes simulation with patient cases having groups of 4 students and one faculty member. Simulation incorporates high-fidelity human simulator, SimMan (Laerdal) in a realistic ICU room having medical equipment and medications. Students interact with the simulated patient by interviewing the faculty member playing the role of patient, physician or family to obtain a history. Students are asked to prepare medica- tions for administration at the bedside and a pharmacotherapeutic plan including rationale for medication selection, administration guidance and appropriate monitoring. All students are debriefed immediately after their patient interaction. Results: Student feedback is extremely positive. Specifically, students enjoy the additive effect of simulation learning above solely discussing a paper case in the classroom. Other comments include how the realistic setting and active learning make them feel more accountable for patient care in the cases provided. Ongoing data collection using a rubric will allow for interpretation of clinical performance data. Implications: This dual technology course allows for efficient use of faculty and student time by providing information out of classroom at the convenience of the student. Additionally, use of simulation clarifies, reiterates, and expands on concepts seen in online modules.

A Multifaceted Initiative to Teaching Students Compounding of Sterile Products. Dale E. English, Northeastern Ohio Universities Colleges of Medicine and Pharmacy, Robb McGory, Northeastern Ohio Universities Colleges of Medicine and Pharmacy. Objectives: The Northeastern Ohio Universities Colleges of Medicine and Pharmacy has developed a multifaceted initiative to introduce first year pharmacy students to USP 797, aseptic technique and the appropriate compounding of sterile products. Method: The sterile products course is a series of lectures and labs. Each lab has 8 students manufacture sterile products and a second group of 8 attend recitations to work collectively on parenteral drug information questions. After two hours, the groups switch. Compounded products include syringes, large volume solutions, piggyback sand patient controlled analgesia formulations. Recitation cases utilize calculations, infusion pumps and the daily dosage form integrated with organ systems concomitantly taught in medical physiology. Students are exposed to emergency situations by filling a request for a catecholamine drip with appropriate labeling and dosage calculations. Results: The course stimulates student interest in parenteral products as well as develops student comfort working with syringes, needles and sterile environments. Recitation sessions challenge the students with scenarios that replicate “real life.” This multifaceted initiative now in its third year has provided a level of education that is well beyond an isolated “one-time” laboratory session on aseptic technique or a “classroom only” course. Implications: Following the multifaceted educational initiative, students are exposed to sterile products and advanced applications on IPPE rotations. We are optimistic this will ultimately result in future pharmacy practitioners applying their knowledge, aseptic technique and problem solving skills to all patients to which they provide care and services.

A Multipronged Approach Encouraging Postgraduate Residency Training. Michael A. Crouch, South University. Objectives: To assess the outcomes of a variety of curricular initiatives advocating residency training. Method: Since 2008, the School of Pharmacy has increased opportunities for students to learn about pharmacy residencies and the 2020 initiative. These activities included: 1) focused lectures (first and second-year), 2) a second-year elective course entitled Postgraduate Opportunities, Pharmacy Residencies, and 3) presentations to the ASHP student chapter. Immediately after focused lectures, first- and second-year students completed surveys regarding their plans to pursue residency training and potential obstacles. Other measured outcomes include the elective course evaluations and the number of students attaining a residency upon graduation. Results: Survey results (2008 and 2009) were available for 251 students. For first-year students (quarter one), when asked regarding their plans to seek a pharmacy residency 40%, 38%, and 22% commented “yes,” “maybe,” and “no,” respectively. When this question was posed to second-year students (quarter six), the percentages...
(26%, 29%, and 45%, respectively) suggest less overall interest (p<0.01). Reasons students did not plan to pursue a residency included financial obligations, competitive nature of residencies, family issues, lack of perceived need, and burnout. From 2006 to 2009, the number of graduates attaining a residency was 9%, 6%, 13%, and 14%, respectively. Approximately 20% of the current graduating class (2010) is pursuing residency training. Implications: Although interest in residencies appears to wane as students’ progress through the curriculum, the number of graduates attaining a pharmacy residency has steadily increased. This study highlights perceived barriers that hinder students from considering this postgraduate opportunity.

APPE Teaching Elective Students and their Role in Developing New Practice Lab Activities. Cherokee Layson-Wolf, University of Maryland, Meghan K. Sullivan, University of Maryland. Objectives: The purpose of this activity is to introduce teaching elective students to the concept of instructional design by revising and/or developing new learning activities for practice lab-related courses. Method: Students completing an APPE teaching elective are assigned a continuous quality improvement (CQI) project where they select an existing component of a practice lab course and either revise that activity to better reflect practice or design a new activity to be incorporated into the practice lab-related courses. Students work with faculty mentors to evaluate existing activities, develop learning objectives, student resources, instructor guides, evaluation criteria and evaluation methodologies. Their teaching rotation is complemented with weekly instructional design discussions with course preceptors, which provide the students with the framework to develop their projects. The students present their projects to preceptors and receive feedback regarding both their presentation and the content that was evaluated and/or developed. The projects are also evaluated for possibility of implementation. Results: Over the 2009-2010 academic year, there were 22 students completing 10 CQI projects. New learning activities were designed to accommodate the new abilities lab sequence within the curriculum. Examples of projects developed included: Introduction to Drug Information Inquiries, Community Dispensing: Transcription and Transfer of a Prescription, A Short Course: Aseptic Technique, Controlled Substances: The How — “2a”. Implications: Teaching elective students are able to experience the steps of designing a learning activity through the completion of this project. In addition, many of the projects have been incorporated in the current academic year or will be incorporated in future practice lab courses.

An Analysis of a Student-led Respiratory Disease Educational Program in an Underserved Population. Cameron C. Lindsey, University of Missouri - Kansas City. Objectives: To describe the student-led respiratory disease program and assess quality of life improvements and reduced resource utilization in uninsured patients. Method: A grant was received to expand disease management services at a free health clinic by a student pharmacist team. Physician input indicated that reducing emergency department visits for respiratory illness was a priority. It was decided to provide a one hour group education program for diagnosed patients followed by individual student-to-patient breakout session at baseline. Group education was created and delivered using the evidence-based guidelines for asthma. At breakout sessions, individualized patient action plans were developed and items were provided (e.g. PEFR device and training, rescue inhaler, educational materials, steroid prescription, and pharmacist medication review). Students followed-up with patients quarterly. Data collected at baseline and follow-up included: age, gender, Asthma Control Test (ACT) scores, smoking status, immunizations, resource utilization and/or missed work days, current respiratory medications and adjustments, severity, device use, and peak flow scores. Interval data will be assessed using a paired student’s t-test while nonparametric data will be assessed using a McNemar or Wilcoxon signed-rank test. Baseline ACT scores and emergency room visits will be compared to quarterly data. Results: Sixteen of 75 invited patients attended educational programming. To date, three patients have dropped out. Data will be presented following 12 months of follow-up. Implications: Student pharmacists have provided an evidence-based educational program to underserved patients. Preliminary results indicate improved ACT scores and fewer emergency room visits.

An Assessment Solution for a High-Enrollment, Online Nursing Pharmacotherapy Course. Jody L. Lounsbery, University of Minnesota, Amy L. Pittenger, University of Minnesota. Objectives: Face-to-face examinations in a proctored environment remain the standard assessment strategy, even for online courses. This project sought to develop and evaluate a case-based assessment for a high-enrollment, online nursing pharmacotherapy course, which could be administered online while maintaining academic integrity. Method: Four case-based exams were developed in parallel for the midterm and final. To control for academic integrity, students were randomly assigned to one of the four exam groups. Exams were delivered via the course management site WebVista and could only be accessed once within a 10 hour window. Exam sessions were time-controlled (60 minutes) once the student began the exam, and the printing command in WebVista was disabled. Students were allowed to consult class notes if time permitted, but not allowed to work in groups. Students were required to sign an honor code statement at the start of the exam indicating that they were working individually. Results: Performance averages across exam versions for the midterm ranged from 88% to 93% and ranged from 88% to 94% for the final. Students rated the exams’ ability to measure their knowledge at a level of satisfactory or greater, 83% on the midterm and 84% on the final. There were minimal to no technical issues during the delivery of the exams. Statistical comparisons from previous course offerings and this offering will also be presented. Implications: Using an online, case-based assessment strategy is effective and feasible for evaluating clinical application knowledge within a high-enrollment nursing pharmacotherapy course.

An Interdisciplinary Approach to Critical Care Training Through Simulation. Bradley C. Cannon, University of Illinois at Chicago, Nikki D. Herlich, University of Illinois at Chicago, Rachel Yudkowsky, University of Illinois at Chicago. Objectives: Medical residents at the University of Illinois at Chicago (UIC) are required to complete a critical care simulation prior to beginning their rotations in the critical care unit (CCU). The goal of this pilot study is to incorporate pharmacy residents into these simulations (i) to help prepare pharmacy residents for code situations and (ii) to improve interprofessional communication between medicine and pharmacy during a code situation. Method: First- through third-year medical residents are scheduled to attend a 2-hour mannequin-based simulation session just prior to their CCU rotations. One first-year pharmacy resident is included in each simulation. Approximately 4 or 5 simulation scenarios are run with a debriefing session immediately after each to discuss areas that need improvement. Following completion of each session, a discipline-specific feedback form is distributed to all participants. Results: Preliminary data show that medical residents appreciate having a pharmacist available to consult during the code. Individual medical residents vary widely in their utilization
of the resource offered by having a pharmacist present. Pharmacy residents do not feel fully utilized as a resource, and are only somewhat comfortable identifying, communicating and correcting errors made by the medical team in a code situation. Both groups felt the interprofessional simulation was a beneficial experience. Implications: Both pharmacy and medical residents could benefit from practice working together in the safe and controlled atmosphere of simulated scenarios, with a focus on communicating and collaborating effectively in critical care and code situations.

Anticholinergic Burden of Older Adults in the Community. Teri L. West, The Ohio State University, Maria C. Pruchnicki, The Ohio State University, Ruth Emptage, The Ohio State University. Objectives: Studies suggest that the burden of multiple medications with anticholinergic activity are additive and increase the risk of side effects. Many frequently-used medications are not routinely recognized for anticholinergic activity and senior patients may be particularly susceptible to adverse effects. Scales have been derived to assess the potential cumulative danger of medications with anticholinergic properties. Our purpose is to describe the anticholinergic burden of older adults in the community. Method: Methods consist of a retrospective cohort study of 450 patient records from comprehensive medication reviews collected by a pharmacist between August 2002-August 2009. Patients included were those > 65 years at the time of review. Exclusion criteria include age < 65 or incomplete records. Data collected include demographics, medications, chronic conditions and prescribers, insurance coverage, and number of pharmacies used. Using the Anticholinergic Cognitive Burden (ACB) scale, scores will be calculated for each participant. ACB scores >3 will be considered clinically significant. Results will be used to identify specific risk factors for predicting significant anticholinergic burden in community dwelling adults. Results: It is expected that many older adults will have a significant ACB score, including those on medications without recognized anticholinergic effects. The results will be used to inform a prospective study to evaluate pharmacist-provided medication therapy management services (MTM) as an appropriate and reproducible model to address this issue in older adults. Implications: This model could be applied by a pharmacist during provision of MTM in a variety of practice settings to improve health outcomes.

Assessment of Pharmacotherapeutic Skills through the Use of Practical Examinations. Robb McGorry, Northeastern Ohio Universities Colleges of Medicine and Pharmacy, Seth P. Brownlee, Northeastern Ohio Universities Colleges of Medicine and Pharmacy. Objectives: Pharmacy students are expected to acquire patient centered skills to monitor and assess ongoing medical care. A series of practical examinations are embedded into the Pharmacotherapeutics sequence to measure student ability to assess patient symptoms, physical findings and identify points for counseling. Method: Pharmacotherapeutic topics are taught through organ system themed modules. Within each module, students are exposed to disease symptoms and associated physical findings. A general overview of organ specific physical assessment with simulated practice is provided where appropriate. A practical exam is utilized in selected modules to assess student skills development in addition to traditional written exams. The practical exam consists of a review of a brief patient case followed by a series of stations where students need to make decisions based upon new information provided at that station. Each station builds upon the case and previous stations. The exam ends with students providing counseling to a simulated patient. Results: Student ability to assess symptoms and counsel the patient increase with each successive module. Student comfort in simulated situations and appreciation of the pharmacist’s role in patient centered care grows with each assessment. Student involvement in IPPE rotations is enhanced as a result of exposure to the practical exam. Implications: Students are expected to perform professional services when they participate in IPPE and APPE rotations. Exposure to simulated situations in the classroom prepares the student for success in patient interactions.

Assessment of Web-based Training (WBT) Modules on Learning Facilitation during APPE in Pediatrics. Jennifer L. Morris, Purdue University, Chad A. Knoderer, Butler University. Objectives: To assess the effectiveness of WBT modules during pediatric APPE to enhance and facilitate student learning of the provision of pharmaceutical care to children. Method: For the 2009-2010 APPE year, 4 pediatric specific WBT modules, including pre and post-assessments, were developed for completion by APPE students. Pediatric modules covered developmental pharmacology (DEVO); antimicrobial use and monitoring (ABX); fluids, electrolytes and dehydration (FED); and drug information (DI). Students were responsible for completing all module aspects within the first week of the APPE. Pre- and post-assessment scores ranging from 0-100 points were collected and analyzed using descriptive statistics and paired t-tests. An on-line survey to assess the students’ perception of the learning experience was distributed at the end of the APPE, and its completion was voluntary. Results: Eighteen of 20 students assigned to a faculty- preceptored pediatric APPE during the 2009-2010 academic year have completed the modules. Significant improvements in post-assessment scores were achieved for 3 of the 4 modules. The most significant improvement was seen with the DEVO and DI modules with mean improvements of 21.7 (p < 0.001) and 31.1 points (p < 0.001), respectively. Significant improvements were not observed in the ABX module. Eight of the 18 students (44.4%) have completed the survey. The majority either somewhat or strongly agreed that the modules improved their understanding of pharmaceutical care of children; increased their comfort level in providing pharmaceutical care to children; and enhanced their pediatric APPE. Implications: WBT modules may expand and improve students understanding of pharmaceutical care in pediatric patients during APPE.

Business Model for Community Clinical Pharmacy Services: A Pharmacy and Graduate Business School Collaboration. Krista Capehart, University of Charleston, Mary L. Euler, University of Charleston. Objectives: To create a clinical practice within a School or College of Pharmacy as a teaching model for the development of revenue-generating pharmacy services in a community setting. Method: Five Graduate School of Business students assisted with the business and marketing plan development for PharmUC Patient Care Clinic within the School of Pharmacy. Fourth year pharmacy students researched cognitive services and presented to the graduate business students. The business and pharmacy students, together with their respective advisors, collaborated to understand the others’ perspective, and to create a viable business and marketing plan and Standard Operating Procedures for the billing of services. Results: The resulting business and marketing plan will provide a strong foundation for the billable clinical services provided through PharmUC Patient Care Clinic while providing a teaching model and learning environment for future pharmacy and business students. Implications: Business and marketing plans are often significant stumbling blocks when developing and implementing community clinical pharmacy services. Pharmacists have the desire to care, but frequently struggle with the business issues. Within University of Charleston,
the opportunity to bring the business perspective together with patient care in a teaching environment is available, supporting the value of multi-disciplinary education. Pharmacy curriculums stress collaboration with other health care disciplines, but expertise and educational opportunities outside the healthcare realm can provide needed support for our patient care initiatives. In addition to providing excellent patient care, modeling for students can continue to be a learning environment for pharmacy and business students in the future.

California Pharmacy Student Leadership Program: Influence on Student Leadership, Teamwork, Research Skills, and Professional Involvement. Janice Hoffman, Western University of Health Sciences, Karl Hess, Western University of Health Sciences, Veronica T. Bandy, University of the Pacific, Michele Belsey, Rite-Aid Corporation, Conrad Bio, Rite-Aid Corporation, Bradley Brazill, California Northstate, James Colbert, University of California, San Diego, Melissa Durham, University of Southern California, Donald G. Floridia, University of the Pacific, Jeffery A. Goad, University of Southern California, Eric K. Gupta, Western University of Health Sciences, Nancy E. Kawahara, Loma Linda University, Maggie Louie, Touro University, Eric J. Mack, Loma Linda University, Sarah McBane, University of California, San Diego, Denis Meerdink, University of the Pacific, Agalia Panos, Touro University, Cyndi Porter, California Northstate. Objectives: To evaluate the impact of the CAPSLEAD program on student pharmacists’ perception of their leadership, teamwork, and research skills and to assess student involvement in professional organizations. Method: In the CAPSLEAD program, 8-10 students are recruited from each California school/college of pharmacy. Students attend an interactive two-day conference where they learn about leadership, time and team management, and networking skills. Each school team selects a topic related to a current pharmacy practice issue and develops a research project to address the issue. The team project culminates in a formal poster presentation at a professional pharmacy meeting on the state and/or national levels. Following the completion of the poster presentation a voluntary online survey will be administered via email to each student CAPSLEAD participant. Survey results will be determined to evaluate the impact of the CAPSLEAD program on leadership, teamwork, and involvement in professional organizations. Results: Internal evaluations from the 2009 CAPSLEAD conference showed students valued this leadership experience as indicated by qualitative and quantitative comments. The post-presentation survey is in progress and will give us a better measure of the impact that the CAPSLEAD program has on the continued professional involvement on students. Implications: Analysis of the post-conference evaluations suggest student participation in a multi-college/school of pharmacy leadership program was seen as valuable. The impact of CAPSLEAD program on the students’ collaboration and teamwork, involvement in professional organization and active participation in hands-on research is currently under investigation. Positive results may encourage other states to initiate similar student leadership programs.

Cessation with Communication: Motivating Pharmacy Students to Counsel for Smoking Cessation. Nathan Hudson, Campbell University, Jana Currie, Campbell University, Wesley D. Rich, Campbell University. Objectives: Pharmacists can have a significant impact on smoking cessation through counseling. Providing formal training to pharmacists regarding smoking cessation would provide another facet to their various abilities to improve public health. The objective of this study is to determine if formal training of pharmacy students will cause an increase in the mean likelihood of the students to counsel patients on smoking cessation. Method: This prospective cross-sectional observational study will include a training session on smoking cessation counseling available to all Campbell University pharmacy students. A survey will be given before and after the training session to assess the students’ willingness to offer smoking cessation counseling based on the following factors: knowledge of OTC/ prescription products, beliefs, perception of available time, role of the pharmacist, and the general comfort level with counseling. The primary analysis will compare the pre-survey and post-survey and it will be conducted using a paired t-test. The secondary analysis will assess the same endpoint but within various demographic categories, such as age, sex, ethnicity, hometown, and year in pharmacy school. The analysis will include ANOVA and paired t-tests when necessary. Results: Results are pending. Implications: Potential implications of this study would affect pharmacists and patients. Formal training may increase the likelihood of pharmacists to offer counseling. An increase in counseling may lead to an overall increase in smoking cessation. Smoking cessation will improve health care for patients and society in general.

Changes in Students’ Viewpoints on Controversial Topics after Online “Community Chats” in a Women’s Health Elective. Emily W. Evans, The University of Louisiana at Monroe, Brice L. Mohundro, The University of Louisiana at Monroe. Objectives: To determine the impact of online discussions on students’ opinions on 3 controversial topics: “Does the pharmacist have the right to refuse to fill/sell Plan B (emergency contraception)?”, “Is the increase in the proportion of women in the pharmacy workforce responsible for the current pharmacist shortage?” and “Should states have legislation to require all girls to receive HPV vaccine before entering the 6th grade?” Method: In the elective course “Women’s Health and the Pharmacist”, 26 students will take part in 3 required online “community chats”. The topics were selected by the students in the course. The chats involve course coordinators posting one or more background readings on the topics; students sharing interesting scientific/news articles and their reflection on those materials; and students replying to their peers’ posts. Guidelines for the chats were reviewed at the start of the semester and include the requirement that students provide supporting references or resources as well as etiquette for the chats. A brief, anonymous electronic survey will be administered after each chat to determine changes in the students’ overall opinions. Results: Ten students have responded to the first survey so far (activated 2/16/10). The responses will be analyzed after each survey has been active for one week. Implications: The purpose of these chats is not to sway students’ opinions. Rather, we seek to spark thought and reflection on these controversial issues. By assessing changes in students’ opinions, we hope to show the impact that such an assignment can have.

Communication Skills: Students’ Perception and Faculty Evaluation of Performance on Therapeutics Oral Examinations. Lisa M. Lundquist, Mercer University, Sharon L. Leslie, Mercer University, Kathryn M. Momary, Mercer University, Angela O. Shogbón, Mercer University. Objectives: To compare students’ perceptions and faculty evaluation of performance of communication skills during therapeutics oral examinations. Method: Two patient case-based oral examinations will be given to all P2 students enrolled in the Cardiovascular / Renal III therapeutics course. Students will be provided with patient cases prior to each oral examination to allow adequate preparation time and will incorporate disease states and pharmacotherapy previously tested in written format. One oral examination will be given individually; one will be a group oral examination with groups of 4 students. In addition to evaluation of
pharmacotherapy knowledge, faculty will assess students’ communication skills using a standard rubric in the areas of rapport (confidence, non-verbal, tone of voice, eye contact) and presentation of therapeutic recommendations (concise, pronunciation, well-prepared, patient-focused). Immediately following each oral examination, students will be asked to rate their communication skills using the same rubric. Students’ perceptions will be compared to faculty evaluation of their communication skills using descriptive statistics, Pearson’s correlation, and paired t-tests. Results: During the spring semester, the oral examinations will be administered and evaluation of communication skills will be completed. Responses from student perceptions will be collated; results and comparison with faculty evaluation of communication skills will be presented. Implications: Assessment of communication skills in a therapeutics course through case-based oral examinations may contribute to the development of a student’s understanding of the connections between knowledge, effective communication, and the practice of pharmacy.

Community Pharmacy and Academic Partnership to provide Generalized Medication Therapy Management in Underserved Region. Leigh Ann Ross, The University of Mississippi, Lauren S. Bloodworth, The University of Mississippi, Tommy E. Spell, The University of Mississippi, Lauren R. Compton, The University of Mississippi. Objectives: To describe and evaluate the implementation of “generalized” MTM (G-MTM) services provided by community pharmacists in collaboration with the University of Mississippi (UM) School of Pharmacy (SOP). Method: Through the UM SOP Delta Pharmacy Patient Care Management Project, G-MTM services are provided in community pharmacies in targeted Mississippi Delta counties with large minority populations, significant risk for poor disease outcomes, and disparities in access to health care. The SOP provides American Pharmacists Association (APhA) MTM Certificate Program training for participating pharmacists. G-MTM “tool kit” was developed and on-site support for implementation is provided by the SOP. G-MTM services are targeted for patients at-risk for medication-related problems, with at least two chronic diseases or two medications identified through pharmacy records, health fair screenings, or provider/self referral. The pharmacist-patient encounter is based on APhA core elements model with patient education and recommendations to primary providers. Data is collected at baseline, each visit, and six months. Evaluation measures include cost avoidance, criteria-based patient reported and clinical outcomes, quality indicator reports, assessment of barriers, partnership incentives, successful communication strategies, and interviews with participating pharmacists. Results: Nine pharmacies signed Memorandums of Agreement for participation. A pharmacist at each site was trained to provide MTM services. Service implementation and patient recruitment is underway. Evaluation measures to date at time of presentation will be reported. Implications: Pharmacists providing G-MTM services in the community setting can increase access to care and improve patient outcomes by enhancing patient understanding of appropriate medication use and increasing adherence to therapy.

Comparing Standardized Patient and Faculty Scores on an Objective Structured Clinical Examination (OSCE). Amy R. Donaldson, Auburn University, Erika L. Kлеппингер, Auburn University, Ray Lorenz, Auburn University, Daniel Parsons, Auburn University. Objectives: To compare scores from standardized patients (SP) and faculty for a PY3 OSCE over five semesters and determine if a training program for SPs improved the accuracy of scores. Method: At the end of each semester, PY3 students enrolled in a skills-based course are evaluated utilizing a 6-station OSCE which accounts for 45% of the course grade. Each station is assessed by an SP and a faculty member utilizing an analytical checklist and a 5-item communication rating rubric. SPs are trained by course coordinators in conjunction with the Office of Teaching Learning and Assessment. In Spring 2008, SPs were trained to deliver the station content, but not to evaluate the station. A training program was implemented in the Fall of 2008 focused on improving the interpretation of the analytical checklist and communication rating rubric. Faculty are trained separately in a workshop setting. Faculty and SP scores on the analytical checklist and communication rating rubric were compared for each station. Results: Each semester, approximately 125 students participate in this high-stakes OSCE. Overall score of the analytical checklist and communication ratings rubric will be compared between the faculty and SP graders. An analysis of the data will be presented from Spring 2008 to Spring 2010. Implications: With improved training and experience, SPs may be used exclusively in grading a high-stakes OSCE to free up faculty time for course and exam development.

Comparison of Performance on Written and Oral Examinations to Communication Skills. Kathryn M. Momary, Mercer University, Angela O. Shogbon, Mercer University, Sharon L. Leslie, Mercer University, Lisa M. Lundquist, Mercer University. Objectives: To compare performance on knowledge-based examinations to faculty evaluation of communication skills. Method: A patient case-based oral examination will be given to all P2 students enrolled in the Cardiovascular / Renal III therapeutics course in addition to traditional written examinations. Students will be provided with a patient case 24-hours prior to the oral examination to allow adequate preparation time and will incorporate disease states and pharmacotherapy previously tested in written format. In addition to evaluation of pharmacotherapy knowledge on the oral examination, faculty will use a standard rubric to assess students’ communication skills in the areas of rapport (confidence, non-verbal, tone of voice, eye contact) and presentation of therapeutic recommendations (concise, pronunciation, well-prepared, patient-focused). Students’ performance on the written and oral examinations will be compared to faculty evaluation of their communication skills using descriptive statistics, 2-way ANOVA, and Pearson’s correlation. Results: During spring semester, the written and oral examinations will be administered and evaluation of communication skills will be completed. Comparison of knowledge-based examination results and faculty evaluation of communication skills will be presented. Implications: Success as a pharmacist requires both therapeutics knowledge and effective communication skills. Identification of potential disparities between knowledge and communication skills may lead to a broader curricular focus on oral communication in therapeutics courses.

Computer Based Simulation to Teach Informal Logic and Evidence Based Reasoning: A Pilot Study. Jeannine M. Conway, University of Minnesota, Richard W. Brown, University of Minnesota, Nichole M. Kulinski, University of Minnesota, Andrew P. Traynor, University of Minnesota, Amy L. Pittenger, University of Minnesota, Genevieve Gauthier, McGill University, Susanne P. Lajoie, Department of Educational and Counselling Psychology McGill University. Objectives: 1) Test the feasibility of using an online patient scenario simulation system to teach and assess clinical thinking; 2) Provide students with experience in case-based decision-making within the context of pharmaceutical care. Method: Volunteers were required to complete a sequence of three scenarios utilizing BioWorld, a computer-based learning environment. In each scenario students identified and solved drug therapy problems and justified their decision(s). Students’ performances were assessed according to key evidences...
collected, differential hypothesis, tests ordered, information request, case summary, confidence level and final answer. Students were provided with immediate feedback and comparison to an expert’s performance for each case. Additional data were collected using online survey and focus groups. Results: Twenty-one students completed the pilot. Preliminary results suggest that students’ performance improved as well as their ability to gauge their confidence for the different related hypothesis. Surveys and focus group thematic analyses reveal positive attitude towards this type of learning activity that is perceived as 1) similar to real-life practice 2) having game-like attributes 3) providing useful feedback on performance 4) providing structure to organize their thinking. Implications: The ability to provide students with multiple opportunities to practice and receive immediate feedback is important in advancing expertise and confidence in clinical decision-making. Utilizing BioWorld may be an effective method to offer practice and feedback to students and inform teaching of clinical decision-making skills. Further use with larger groups of students is warranted before considering broader implementation.

Consensus Recommendations from the Strategic Planning Summit for the Advancement of Pain and Palliative Care Pharmacy. Christopher M. Herndon, Southern Illinois University Edwardsville, Rebecca S. Finley, Thomas Jefferson University, Mary Lynn McPherson, University of Maryland, Suzanne Nesbit, The John Hopkins Hospital, Sidney Kimmel Comprehensive Cancer Center, Department of Pharmacy, Lee Kral, University of Iowa Hospitals and Clinics, David Craig, H. Lee Moffitt Cancer Center. Objectives: The Strategic Planning Summit for the Advancement of Pain and Palliative Care (PPC) Pharmacy was convened to identify opportunities to improve the education of pharmacists and student pharmacists on this topic at all facets of their professional career (i.e. professional degree program, post-graduate training, continuing education endeavors, and credentialing). Objectives of this summit included 1) identification of stakeholder partnerships to improve standards and assessment of educational opportunities, 2) draft model curriculum for professional degree programs, 3) provide core objectives for PGY1 and non-PPC PGY2 residency programming, 4) develop a model certificate / boarding preparation course and 5) reach consensus on appropriate models of credentialing for PPC pharmacists. Method: Made possible by a generous grant from the Mayday Fund, the Strategic Planning Summit Advisory Board identified key stakeholder organizations which represent either pharmacists, or pain and palliative care professionals to invite to the summit. The Summit was structured into six working groups to review currently available statements, programs, and guidelines and to develop interprofessional, pharmacist-directed recommendations. These working groups included: Standards and Assessment, Professional Degree Program Curriculum, Post-Graduate Education, Core Certificate Continuing Education, Intra-professional Certificate Continuing Education, and Credentialing. Results: Seventy nine individuals representing twenty-five professional organizations participated in the Strategic Planning Summit. Credentialing workshop recommendations will be presented in their entirety. Implications: Pharmacists in all practice settings have an important role in the care provided to patients with pain and related symptoms. Increasing the educational opportunities available to pharmacists and pharmacy students will insure better patient care.

Creating an Open Source Pharmacy Student Portfolio for Use as Assessment and Professional Portfolios. Amy L. Seybert, University of Pittsburgh, Cheri L. Hill, University of Pittsburgh, Randall B. Smith, University of Pittsburgh. Objectives: To enhance the current portfolio process by developing a website for students’ use of portfolios for professional development. Method: An open source portfolio was developed using Moodle for P1 and P2 pharmacy students. Students upload evidence to their portfolio within the following categories: critical thinking, development of knowledge and skills, communication skills, professional responsibility and ethics, social interaction, citizenship, leadership, professionalism, life-long learning, patient assessment, pharmaceutical care plan development, management, and decision making, pharmaceutical product preparation, dispensing and administering, management and public health. The types of evidence to be uploaded include Word documents, PowerPoint presentations, web links, video files and images. The electronic portfolio website will be evaluated to see how many students access the site, what particular areas are utilized most frequently, and when the students access the site. We are conducting surveys and student discussion groups to understand the use of portfolios, the website, and the perceived value of the portfolio process. Additionally, students meet individually with faculty for a 10 minute verbal presentation of their portfolio each semester. Results: The majority of our students, 172/216 (80%) surveyed, were familiar with portfolios before the implementation of the portfolio website, and most, 118/216 (54%), thought that developing their portfolio would take more than 5 hours per semester. The 10 minute verbal presentation of portfolios has been successful as a mentoring tool based on student feedback. Implications: Offering a user-friendly web-based portfolio, at no cost to the students will increase the usefulness and perceived value to students and faculty.

Design, Implementation and Evaluation of a Summative Exam for P-2 Students. Eric F. Schneider, University of Arkansas for Medical Sciences, Cindy D. Stowe, University of Arkansas for Medical Sciences, Martha H. Carle, University of Arkansas for Medical Sciences, Stephanie F. Gardner, University of Arkansas for Medical Sciences. Objectives: A high-stakes summative examination to identify minimal competence among P2 students was developed. This poster describes the process and data from the first two years. Method: An examination blueprint was developed based on program-wide competencies as distributed among courses in the first two years. Questions were written and reviewed by faculty. A 214 item pretest was administered in 2008. One hundred Items were selected for use in the high-stakes examination based on pretest statistics and the blueprint. The 2009 high-stakes examination consisted of 100 live and 25 pretest items. The passing standard was set using a modified Angoff procedure. Psychometric analyses were utilized to determine overall examination validity and item discrimination. Customized student reports outlining overall, across domain, and course-specific performance were distributed. Results: 118 students took the high-stakes examination in 2009. The score ranged from 47-87% (mean 67%) with a passing standard of 45%. Cronbach’s alpha (assessment of reliability) was 0.76. The point biserial correlation was used as a measure of item-specific discrimination, with 84% of the items discriminating above the 0.10 level. 91% of items were in the desired 0.2-0.95 range for item difficulty. Item necessity analysis revealed 88% of questions rated above a 2.0 level. Implications: The examination is a useful summative assessment tool conducted at the end of the P2 year. Continued development of items targeting global competencies at the minimally competent level will continue to strengthen the examination.

Objectives: An elective 1-credit hour, 2-semester, small-group, discussion-based leadership course was designed and implemented around a series of contemporary leadership readings, and course effectiveness was assessed during the 2008-2009 and 2009-2010 academic years. Method: Enrolled students were invited to complete an anonymous online pre-course, interim-, and post-course survey assessing confidence in their leadership abilities and leadership skills, and course instructional methodology. Survey questions were multiple-choice or answered with a Likert (forced ranking) scale. Upon completion of data collection (May 2010), pre-, interim-, and post-course survey data will be analyzed (results from 2008-2009 are available to date). Results: A total of 21 students (2008-2010) have enrolled in this course and have completed the survey in progress. Available data during the 2008-2009 academic year showed that from baseline to completion of the course, the percentage of students who agreed or strongly agreed they were confident in their ability to lead others increased from 63.6% to 72.7%, while the percentage of students who disagreed or strongly disagreed that they were confident in their ability to lead others decreased from 18.2% to 0%. All students agreed or strongly agreed that the course prepared them to be a more effective leader, and that they would recommend this course to other pharmacy students interested in developing their leadership-related skills. Additional data from students in the current class will be compared to the previous academic year. Implications: This leadership course was well received and appears to have positively impacted students’ confidence in their leadership abilities and perceptions of their overall leadership skills.

Developing a New Integrated Dermatology Course for Pharmacy Students. Fei Wang, University of Connecticut, Lauren S. Schlesselman, University of Connecticut, Brian J. Aneskievich, University of Connecticut. Objectives: To design, implement, and evaluate a course on dermatology in the pharmacy curriculum and assess its effect on pharmacy students’ perceptions, attitudes, and knowledge. Method: A novel one credit dermatology module was implemented in spring semester 2010 as a part of the core curriculum required for P-2 students in the professional program. The course was designed so students received the knowledge component of the course delivered via web-based activities, readings, and a weekly quiz to be completed prior to class meetings. Class time was utilized for case discussions and application of the material learned. A pre- and post -course survey using a Likert-type scale (1 = strongly agree, 5 = strongly disagree) and descriptive statistics are being employed for assessment. This survey was approved by the University of Connecticut Institutional Review Board. Results: A total of 76 out of 100 students participated in the pre-course survey. In the preliminary results, 63% of respondents were currently employed in either a community or hospital pharmacy. Overall, 95% of students support the inclusion of dermatology in the curriculum but 62% do not feel they have the knowledge and competence in caring for patients with dermatologic conditions. Students also perceive that all the course topics offered in the course are applicable to practice as pharmacists. Implications: Conclusion: Most students believe that the inclusion of a dermatology course is useful and will enhance their roles as pharmacists.

Development and Evaluation of a Rubric to Assess Value of Student WIKI Contributions. Bonnie A. Falcione, University of Pittsburgh, Denise L. Howrie, University of Pittsburgh, Susan M. Meyer, University of Pittsburgh. Objectives: Develop and evaluate a rubric to assess the value of an individual student’s contributions to WIKI-based collaborative cased-based group work. Method: WIKI technology may facilitate group collaboration and provide evidence of an individual’s “value” to task completion that other measures (peer/self-evaluation, group grade, WIKI usage) cannot provide. A rubric to assess value of individual student’s WIKI contributions was developed and tested during a collaborative case-based activity in a pharmaco therapy course. Independent rubric application by two faculty members to 10 randomly selected student’s work indicated initial reliability. A revised rubric was applied to the work of 30 randomly selected students. Faculty reviewed and scored each contribution and assigned a composite “value” score for each student. Results: A rubric modeled upon Bloom’s Taxonomy with a 4-point value scale and six domains was created to evaluate student WIKI contributions. Comparison of the 30 student composite “value” scores demonstrated 66.7% rater concordance and moderate inter-rater reliability (Kappa=0.428, SE=0.143; p=0.003, 95%CI=0.148-0.707). Rater discordance was consistently limited to within 1 value interval. Rater concordance analysis across six rubric domains is underway. A weak positive correlation was demonstrated for the composite “value” scores and student peer and self-evaluations, group grade and student WIKI page saves and lines modified (Spearman’s Rank P=0.342, p=0.065; P=0.187, p=0.36; P=0.246, p=0.19; P=0.334, p=0.07 and P=0.372, p=0.04, respectively). Implications: Early analysis suggests the rubric is moderately reliable for overall value of individual student contributions to group work and may serve as a tool to assess individual student WIKI contributions that other measures cannot provide.

Development and Assessment of an Interprofessional Education Experience in a Primary Care Teaching Clinic. Brigitte L. Sicat, Virginia Commonwealth University, Sallie D. Mayer, Virginia Commonwealth University, Susan M. Polich, Virginia Commonwealth University, Christine Huynh, Virginia Commonwealth University, Rita M. Willett, Virginia Commonwealth University. Objectives: To develop and evaluate an interprofessional education (IPE) experience for pharmacy and medical students on rotation in a Primary Care Clinic. Method: An IPE experience was developed consisting of (1) a model for clinical roles for pharmacy and medical students in a primary care clinic; (2) an on-line introduction to each of the professions; and (3) a format for conducting an interprofessional group discussion for patient care. All pharmacy and medical students participate in the IPE experience by completing the on-line “Introduction” module, engaging in a group discussion on interprofessional patient care, and participating in the IPE clinic experience. Students in the assessment study will complete the following activities pre-and post- the IPE experience: (1) the Interdisciplinary Education Perception Scale (IEPS) and Attitudes Toward Health Care Teams Scale (ATHCTS) and (2) a concept map of factors involved in medication nonadherence. Students will complete these activities after participating in the IPE model: (1) the Student Assessment of Learning Gains (SALG) and (2) focus groups. Results: Data to be presented. Descriptive statistics will be used to analyze responses to and determine if a pre- and post-difference exists in the IEPS, ATHCTS, and concept maps. Descriptive statistics will be used to analyze the SALG. Focus groups will be analyzed using traditional qualitative techniques. Implications: This IPE experience can be adapted for use with pharmacy and medical students as well as residents who work together in an outpatient clinic.

Development and Implementation of a High-stakes Objective Structured Clinical Examination (OSCE)-based Senior Summative Examination. Cindy D. Stowe, University of Arkansas for Medical Sciences, Eric F. Schneider, University of Arkansas for Medical
Development of Pharmacy Skills Assessments (PSA) to Evaluate Clinical and Communication Skills of Pharmacy Students. Seth P. Brownlee, Northeastern Ohio Universities Colleges of Medicine and Pharmacy, Susan P. Bruce, Northeastern Ohio Universities Colleges of Medicine and Pharmacy. Objectives: Pharmacy students, similar to medical students, must be able to integrate knowledge and skills to provide high quality patient-centered care. At NEOUCOM, medical students are required to complete a series of clinical skills assessments in preparation for the USMLE Step 2 exam. The national exam “uses standardized patients to test medical students on their ability to gather information from patients, perform physical examinations, and communicate their findings to patients and colleagues.” We recently initiated a similar series of assessments to evaluate clinical and communication skill development of pharmacy students. Method: A PSA is conducted in the curriculum thrice, starting in the P2 year and concluding before APPEs. Each PSA has four separate components: (1) videotaped patient interviewing; (2) care planning; (3) SBAR case presentations to faculty; and (4) videotaped patient counseling. Each PSA is designed to replicate a “real life” encounter with a standardized patient who portrays an individual with a medical condition. Each successive PSA case presents a higher level of complexity and required skills. Results: Faculty raters evaluate student performance by providing formative and summative assessment about their strengths and weaknesses in clinical knowledgebase and patient-centered skills, the foundation of safe, effective practice. Implications: Faculty evaluations and analyses of student performance are used to make decisions about curricular revisions. Once on APPEs, students will be surveyed to assess the perceived impact of PSAs on their comfort level with patient care. The PSA may evolve into a high-stakes competency assessment to determine student progress within the curriculum.

Development of Student Evaluation Skills Utilizing a Longitudinal Integrated Peer Review System. Robb McGory, Northeastern Ohio Universities Colleges of Medicine and Pharmacy, Seth P. Brownlee, Northeastern Ohio Universities Colleges of Medicine and Pharmacy, Richard J. Kasmer, Northeastern Ohio Universities Colleges of Medicine and Pharmacy. Objectives: Pharmacists need to develop skills that are useful in evaluating employees, interns and students. Students acquire these critical evaluation skills by participating in numerous team exercises each with a peer review process. Method: The Northeastern Ohio Universities Colleges of Medicine & Pharmacy developed a structured approach that spanned the 4-year Pharmacy curriculum focusing on development of core competencies related to peer evaluation. The format involved a series of peer review assessments with increasing requirements for critical review. P1 expectations for review are general, quantitative in nature and simple to encourage involvement. P2 expectations increase with incorporation of verbal critiques and distinct quantitative assessments as peer evaluation performance. P3 expectations will shift to peer evaluation of performance within a team structure instead of focusing on individual qualities. A different evaluation tool is used for each year of the evaluation process. Results: Student ability to critically evaluate fellow students increases with each year. Initial desire to evaluate peers is limited as students are reluctant to evaluate colleagues. However, with ongoing team functions in each course, students learn that teamwork involvement and commitment to projects differ between students and projects. Peer scores separate from the average when faculty are asked to teach more with less time available, this method of elective development may prove beneficial for faculty and students alike.
Development of a Dermatology Elective with a Focus on Cosmeceutical Compounding. Jamie L. Kearns, Duquesne University. Objectives: To develop a dermatology-based elective with a focus on cosmeceuticals, a unique aspect of pharmacy compounding and a new addition to the pharmacy curriculum Method: This new elective course was added to the professional pharmacy curriculum in 2009 to focus on dermatology, something not routinely taught in core classes. The course focused on common dermatologic problems seen in community pharmacy. After mastering the dermatologic disease states and available treatments, students were then introduced to the discussion of cosmeceuticals, custom-made products containing pharmaceutical ingredients. The first year offering contained only the theory of cosmeceutical compounding. The current course includes a laboratory component and formal assessment of the student’s knowledge by utilizing pre- and post course knowledge exams. Student evaluation surveys which assess the teacher’s performance will also be used. Results: The first half of the semester utilized a more traditional teaching method focused on dermatologic conditions and treatment algorithms. During the second half of the semester, students engaged in interactive discussions about the theory and practice of cosmeceuticals. To augment this theory, students will now conceptualize and formulate a cosmeceutical to treat a mock patient. Implications: This course goes beyond compounding as learned in pharmaceutics lab. It will empower student pharmacists to explore opportunities for pharmaceutical practice and encourage entrepreneurship.

Development of a Professionalism Pledge at a New School of Pharmacy. Richard O’Brota, St. John Fisher College, Amit Patel, St. John Fisher College, Kerry-Ann Fuller, St. John Fisher College, Megan Sullivan, St. John Fisher College, Todd Dewey, St. John Fisher College. Objectives: Student professionalism within pharmacy education is a frequently cited topic. A search of the AJPE using the term professionalism resulted in 18 citations within the tile, 32 within the abstracts and 20 within keyword words. Helping students define professionalism by creating their own pledge is a strategy to enhance and maintain professionalism within the school. Student government wants to create a professionalism pledge that represents input from the first four classes in the history of the school. Method: The four class presidents will create a personalized draft professionalism pledge based on the patient-pharmacist relationship as described in the Student Professionalism White Paper of the June 2009 issue of Pharmacotherapy. The draft pledge will then be shared and students will be given an opportunity to assess the document. A likert scale assessment of each professionalism tenet will be sought from all students via electronic means. The class presidents will then analyze the results of the student’s scores. Tenets with unfavorable scores will be reviewed by a focus group of students from multiple classes and rephrased. This finalized document will then become the Professionalism Pledge for the School. Results: The professionalism pledge developed will be shared with all current and future students once the final document has been written. Implications: A student centered philosophy should allow student input into the guiding documents of the student body. A duly elected student government can help develop a professionalism pledge within a school of pharmacy.

Development of a School of Pharmacy PGY1 Community Pharmacy Residency Program. Leigh Ann Ross, The University of Mississippi, Lauren S. Bloodworth, The University of Mississippi, Justin Shermans, The University of Mississippi, Tommy E. Spell, The University of Mississippi, Lauren R. Compton, The University of Mississippi. Objectives: To describe the implementation of a PGY1 Community Pharmacy Residency Program through The University of Mississippi (UM) School of Pharmacy (SOP) Delta Pharmacy Patient Care Management Project. Method: The UM SOP Delta Pharmacy Patient Care Management Project began in 2008 with the overall goal to increase access to care and improve medication use in the underserved Mississippi Delta region through the implementation of medication therapy management (MTM) services in community pharmacies. In 2009, a goal was added to increase the health provider network in this region by establishing a Community Residency Program. This program is unique in structure, innovative in support mechanisms and diverse in practice experiences. The residency is a partnership between the UM SOP and Biggs Drug Store (Crystal Springs, MS). Practice experiences are longitudinal and include Delta Pharmacy Patient Care Management Project, UM Health Care Cardiometabolic Clinic, Biggs Drug Store, Webb’s Pharmacy (Specialized MTM), Research, and Academia (elective). Results: Funding sources were identified, the residency program was established, and the first resident was accepted in July 2009. The program has been granted “candidate” status for ASHP/APhA accreditation. An expansion of the program is anticipated in 2010-2011 and recruitment is underway. A detailed description of the program structure, implementation process, challenges encountered, and successful strategies will be included in reporting results. Implications: As more pharmacy graduates seek residency opportunities, Schools/Colleges of Pharmacy must seek innovative ways to facilitate and support the development of residency programs. This program description will provide insights and assist other institutions in development of community-based residency programs.

Development of a Teaching Effort Map to Help Guide Hiring Strategies and Timelines. Michael C. Brown, Concordia University Wisconsin. Objectives: A teaching effort map was developed to help ensure the teaching mission of the Concordia University Wisconsin School of Pharmacy Department of Pharmacy Practice would be met as this new department grows over the next three to four years. Method: Teaching elements for the department were broadly defined, including: 1) required course-based instruction and assessment, 2) experiential site and preceptor development, 3) curricular-based assessments, 4) electives, and 5) practice and student precepting (in addition to non-faculty preceptors). Average faculty member responsibilities were estimated at 75% time on individualized combinations of these elements along with scholarship synergistic with practice or teaching activities. The other 25% of time included both service and scholarship outside of teaching/practice activities. Itemized, comprehensive estimates were developed for average faculty time spent per week on specific teaching activities under these elements, which were then used to build the teaching effort map. Results: The map estimated a need for 22.25 pharmacy practice FTE (2.5 FTE administrators, 16.75 FTE faculty and 3 FTE non-faculty practitioners). The projected proportion of cumulative faculty members’ time on each element was: 29% required course-based instruction and assessment; 14% experiential site and preceptor development; 13% curricular-based assessments; 5% electives; and 40% practice and student precepting. Non-administrator FTE remained reasonably constant each academic year, ranging from 6.25 to 7. Implications: Projecting teaching needs through this process provided a novel, useful map that
Development of a Web-Based P4 Capstone Review Course. Beverly A. Talluto, Texas A&M Health Science Center, Mary L. Chavez, Texas A&M Health Science Center, Mark Bremick, Texas A&M Health Science Center, David Matthews, Texas A&M Health Science Center, Barry Bleidt, Texas A&M Health Science Center, John Bowman, Texas A&M Health Science Center. Objectives: To create a case-based review course to assess the ability of fourth-year pharmacy students (P4) to provide patient care through advanced disease state management. Method: The review course is administered concurrently with P4 rotations. A faculty committee developed the course in response to a P4 survey requesting disease state review. Fifteen patient-based cases with multiple choice questions and feedback are developed by practice faculty. The multi-disease state cases escalate in complexity during the course. A standard template provides consistency in case writing. Committee members review content and post cases every two weeks on Blackboard9 (Bb9) using Respondus. A two hour window with unlimited attempts is granted in each two cases every two weeks on Blackboard9 (Bb9) using Respondus. A two hour window with unlimited attempts is granted in each two week period. A reminder is sent when cases are open or closed. Students are required to complete each case with 100% accuracy. Remediation is required of students who did not pass or complete the case(s). Student feedback is solicited using SurveyMonkey at the end of cases 4, 8, 12 and 15. Results: Preliminary results indicate student satisfaction. Student comments request increased case complexity. Cases not completed increased in number, ranging from 1 to 5 students, as the course progresses. A discussion board feature was added in response to student input. Data collection is ongoing. Implications: Course Barriers *Use of newly implemented Bb9 platform *Consistency in number and quality of questions submitted *Faculty meeting deadlines and sensitivity to case review and question critique Course Benefits *Faculty development in case based assessment *Students indicate the course augments practice experience.

Evaluating Leadership Skills of Students through the Development and Execution of an Orientation Program. Steven A. Scott, Purdue University, Edward Battjes, Purdue University, Neena Phadke, Purdue University, Ryan Teagno, Purdue University. Objectives: Following endorsement by a Curriculum Task Force in 2008, an expanded orientation program for students entering the professional program was developed and implemented in the fall of 2009 by a student lead team. Method: Three P-4 students stepped forward to work with a faculty coordinator and staff to expand the orientation program from one-half to 2.5 days of programming. All three students had previous experience with the campus-wide freshman orientation program. The program addressed 4 key goals: 1) orienting students to the WL campus, 2) enabling students to know their fellow classmates, 3) encouraging students to get out of their comfort zone, and 4) informing students of expectations and responsibilities associated with being in a professional program. Highlights of the program...

included a professionalism fashion show, team building activities on
the University’s low-ropes course, an introduction to cultural com-
petency, decision making exercises involving ethical and profes-
sional issues, a professional dinner etiquette seminar, a networking
luncheon with alumni, and roundtable discussions with faculty and
upperclassmen. Results: The student leaders gained experience with
program planning, budgeting, working with University and School
personnel, coordinating student and alumni volunteers, and running
and evaluating a complex program. The expanded program was well
received by the Class of 2013. Implications: Plans are underway to
critically evaluate the results of the program evaluations, fine tune
the program, and form an orientation committee made up of students
from all professional years to coordinate future orientation programs.

Evaluating the Effectiveness of a Question-Based Learning
Method to Promote a Student-centered Learning Paradigm. Huan
Mark Nguyen, Western University of Health Sciences, Siu-Fun
Wong, Western University of Health Sciences, Eunice P. Chung,
Western University of Health Sciences, David Q. Pham, Western
University of Health Sciences, Anandi V. Law, Western University
of Health Sciences. Objectives: A Question-Based Learning (QBL)
method, derived from the PBL (Problem-Based Learning) method,
was created to promote active learning in didactic curriculum. The
QBL approach directs students to compose a comprehensive answer
to specific questions by gathering information from published resour-
ces in the literature. The purpose of this study evaluates the effec-
tiveness of QBL in student learning and retention of knowledge.
Method: This is a prospective single center study including 140 level
III student pharmacists (SPs). SPs who did not participate in both pre-
and post-examinations were excluded. The class was divided into 16
teams to research on 8 content-based questions created to reflect the
progressive process of a selected clinical subject. For each question,
two teams were assigned the QBL group and the remaining 14 teams
were the Observational-based Learning (OBL) group. Sixteen content
examination questions were used to assess for difference in knowl-
edge levels and retention between the QBL groups and the OBL
groups assessed 3 months apart. Analysis will include comparison
of student performance as measured by exam scores. Continuous
variables will be compared using t-test and categorical variables with
chi-square. Results: Data are currently being analyzed and the results
will be presented. Implications: We hypothesized that the QBL
method will enhance students’ knowledge level and retention.

Evaluating the Soler Method in Bibliometric Searches. Dennis F.
Thompson, Southwestern Oklahoma State University. Objectives:
Soler has developed a computer tool to filter publications by authors
with identical names (homologues). Using the Soler method, homo-
logue are removed by a 2 or 3 step process rather than meticulously
researching each citation. The purpose of this research is to evaluate
the Soler method using pharmacy faculty publication lists. Method:
A convenience sample of 20 pharmacy faculty with backgrounds in
both pharmacy practice and pharmaceutical sciences will be utilized.
Faculty publication lists will be obtained by web searching for pub-
licly available faculty curriculum vitae (CVs) and through pharmacy
faculty CVs available to the author. Web of Science (WoS) searches
will be completed for each author and homologues removed with the
pdf). Resulting publication lists will be evaluated against the faculty
CVs, which will be considered the “gold standard” after non-WoS
citations are removed. Results: Data will be evaluated as total num-
ber of publications/faculty, total number of WoS publications/faculty,
% publications identified through the Soler method, and % publications
missed by the Soler method. Accuracy and precision of the Soler method
will also be calculated. Implications: These data may help determine
the precision and accuracy of the Soler method in removing homologues
in bibliometric studies.

Evaluation of Faculty and Student Perceptions of Effective Study
Methods and Materials and Course Mastery. Gillian Bell, The
University of Tennessee, Katie J. Suda, The University of Tennessee.
Objectives: Literature on student and faculty perceptions of effective
study methods and materials is scarce. Students and faculty may have
differing opinions on the learning process that could influence learn-
ing and course design. The objective of this study is to assess if
faculty and student perceptions of study methods and materials cor-
relate to perceived mastery of material. Method: A preliminary sur-
vey was administered to students in the didactic portion of their
education. Open-ended questions pertaining to student learning tech-
niques and resources were assessed for themes. A focus group
amongst course directors and students stratified by year was con-
ducted post-survey. Focus groups were asked to provide their percep-
tion on how courses are successfully completed. Results: Preliminary
results demonstrate that the majority of students found the mandatory
textbook useful for learning material, but supportive resources were
also mentioned. Trends were observed between first and second-year
students where fewer first-year students found the mandatory text-
book to be useful. The main learning method recommended by stud-
cents was to review the material regularly and second-year students
recommended viewing lectures again online. Final results pertaining
to student and faculty focus groups are ongoing and will be presented
at the meeting. Implications: The implications of this study are for
faculty to understand the methods students are using to learn course
material. In addition, faculty may want to consider additional or
alternative course materials based on student partiality. Finally, this
information can be used by future student pharmacists to assist in
successful mastery of the didactic curriculum.

Evaluation of a Pilot Community Engagement Course in Partner-
ship with Local Community Health Centers. Kassandra M. Bar-
telme, University of Minnesota, Andrew J. Ticcioni, University
of Minnesota, Doneka R. Scott, University of Minnesota, Todd D.
Sorsen, University of Minnesota, Kristin K. Janke, University of Min-
nesota. Objectives: Evaluate perceptions and experiences of students
and clinic staff participating in a new community engagement course.
Method: Students will complete a pre- and post-course survey and
participate in a post-course focus group. These tools will measure
the change in students’ perceptions of underserved populations, motivations
for taking the elective, professional expectations to volunteer as
a pharmacist and the ability of the elective to meet benchmarks of
curricular engagement. These benchmarks may include gaining an
understanding of underserved populations and confidence in provid-
ing care to a variety of patient groups. The clinic director and phar-
macist at each of the participating health centers will be interviewed
in person or by phone. The interview will determine perceptions of
the preparation of students for their service projects, the students’
contributions to the site, and the administrative support and commu-
nication from the college. Results: Eighteen students are enrolled in
the course and five health centers are participating as host sites.
Students were prepared by watching video tours of the sites and
reading descriptions of the sites and projects as well as class readings
and in-class discussions. Sites were prepared by being involved in
developing the course objectives and defining site-specific service
projects. Future results will include the results of the surveys, focus
group and interviews. Implications: Course enhancements will be
implemented based on findings. Results will also inform plans for further integration of community engagement activities within the curriculum. Lessons learned will support engagement initiatives focused on underserved communities at other schools of pharmacy.

Evaluation of a Blended, Multistate Teaching and Learning Development Series for Pharmacy Residents. Michael A. Crouch, South University, Amy M. Lugo, South University. Objectives: To assess implementation and outcomes of a blended (online and face-to-face) teaching and learning development series. Method: The School of Pharmacy offers a development series to local and distant hospital-based residency programs. It includes ten online lectures (dynamic Articulate® presentations with assignments) and four face-to-face sessions (Internet broadcast for distant programs). Additional series requirements include delivering a didactic lecture, reflecting on an observed lecture provided by an experienced faculty member, precepting rotation students, and composing a teaching portfolio. The outcomes of interest consist of pre- and post-survey results (dichotomous questions), which include resident self-assessment (Likert scale, 1-5). Results: The analysis includes thirteen residents from five residency programs in two states. At baseline, a majority of residents answered affirmatively they can compare and contrast teaching methods (92%) and identify strategies to enhance teaching skills (92%). A self-identified area of improvement included the capability to develop/deliver a didactic lecture (median score of 2). Few residents at baseline affirmatively answered they can describe basic concepts of current pedagogical theory (15%) or compose a teaching portfolio (27%). Residents ranked their knowledge/skill regarding the portfolio as low in terms of describing its purpose, outlining its development, explaining its components, and summarizing how to demonstrate reflection and growth (median score of 2, all variables). End of series survey results will be presented and compared to baseline. Implications: This study documents successful implementation of a blended, multistate teaching and learning development series. Baseline survey results provide areas for resident improvement and emphasis during the series.

Evaluation of Diabetes Practice Laboratory Involving Active-learning and Role Playing Techniques in a Large Classroom. Suzanne M. Galal, University of the Pacific, Veronica T. Bandy, University of the Pacific, Eric G. Boyce, University of the Pacific, Rajul Patel, University of the Pacific. Objectives: To evaluate the impact of active learning and role playing on students’ knowledge, abilities, and confidence in diabetes care. Method: At the beginning and end of a 2-hour laboratory session, P3 students will complete an assessment of their knowledge and confidence in providing diabetes counseling, care and education. Within the session, students will rotate through the roles of a pharmacist, patient, and evaluator (peer assessor). The three main topics covered include lifestyle modification, self-monitoring, and medication management. Activities include counseling and education on carbohydrate counting, proper use of blood glucose meter, proper technique in administering insulin, and foot care. Correlations of post-tests and peer assessments with performance on multiple choice questions on diabetes mellitus will also be performed. Students will evaluate this experience using a standardized survey. Results: Pre and post test assessment will be analyzed to evaluate the changes in students’ knowledge and confidence level in providing diabetes counseling, care and education. Peer assessments and correlations with examinations scores will also be used to evaluate student confidence and knowledge. Student evaluations will be used to assess and consider changes in this experience. Implications: The pre and post tests, peer assessments, correlations with examination performance, and student evaluations of the experience will provide the information needed to better understand the development of these abilities and methods to better prepare students’ abilities in providing comprehensive care to patients with diabetes.

Evaluation of the Pharmacy Faculty Member’s Perspective on the Student/Faculty Relationship in Online Social Networks. Anne H. Metzger, University of Cincinnati, Timothy R. Ulbrich, Northeastern Ohio Universities Colleges of Medicine and Pharmacy, Kristen N Finley, Ohio Northern University, James W. McAuley, The Ohio State University. Objectives: Online social networks like Facebook are becoming more popular amongst college students, and faculty may choose to have a presence in online social networks. No papers have examined the faculty member’s perspective about the student/faculty relationship in online social networks. The objective of this project is to obtain feedback from faculty on student/faculty relationships in online social networks. Method: An online survey was developed by a group of faculty members; one from each of four Ohio Colleges of Pharmacy (The Ohio State University, Ohio Northern University, Northeastern Ohio University College of Pharmacy, and the University of Cincinnati). The survey was pilot-tested before an email invitation was sent to 181 faculty members at the four colleges. The data was collected via the Qualtrics online survey system. Results: Initial results show a response rate of 52%. Nearly half of the respondents have a Facebook site, although the majority maintain it for social, not professional reasons. Approximately 79% of faculty who do maintain a Facebook page do not accept current students to become their facebook “friends,” although only 53% feel that accepting a student as a “friend” presents a conflict with their appointment. All faculty who are friends with students on facebook were not initiators of friend requests for current students; rather they accept the request sent by a student. Implications: As social networking sites become more popular means of communication, defining the student/faculty role is important. The results of this survey give insight into several issues regarding the student/faculty relationship in online social networks.

Evaluation of the Predictive Relationship of Third-year Student Assessment Outcomes to Graduate NAPLEX. Performance. Glenn Anderson, Texas Tech University Health Science Center, Summer Balcer, Texas Tech University Health Sciences Center, Arthur A. Nelson, Texas Tech University Health Sciences Center. Objectives: To assess the relationship of P3 student performance on annual progress assessments to NAPLEX performance. Method: The annual progress assessment is designed to examine student competency in the domains of basic science, patient care, dispensing pharmaceuticals, social administrative sciences, written communication skills, and practice skills. The assessment is comprised of 220 multiple choice items, an essay, and an objective structured clinical examination (OSCE). Students included in this analysis completed the assessment in January of their third academic year. Scaled total, domain specific, essay, and OSCE scores were computed for each student. Student NAPLEX outcomes, as aggregate scores, were obtained from the Texas State Board of Pharmacy under the Freedom of Information Act. Only student performances from the first assessment completed were included in the analyses provided here. Regression analysis was performed using NAPLEX performance as the independent variable and total scaled annual progress assessment score as the predictor variable. A second regression analysis was performed using individual scaled domain scores as predictors. Results: Performance data for 64 third-year students were included in the analysis. Performance on the overall annual progress assessment was moderately correlated,
Experience with an Exam Remediation Procedure in a 3-Year Accelerated Program. Kimberly K. Daughterty, Sullivan University, Meghan M. Bodenberg, Sullivan University, Gopal Pillai, Sullivan University, Hieu T. Tran, Sullivan University. Objectives: Sullivan University College Of Pharmacy (SUCOP) has developed an examination remediation plan. Students are allowed to remediate any exam (not finals) with a score < 69.5%. The remediation given is determined by the course coordinator and department chair. Upon successful completion of remediation, students will receive a score of 70% determined by the course coordinator and department chair. Poster objectives are to determine P3 student competency. Future P4 assessment may be transitioned to a more OSCE-based, performance focused modality.

Method: Data has been collected through the Fall Quarter of 2010 for both Classes of 2011 (PY2s) and 2012 (PY1s). Results: A total of 113 different exams (PY1s = 45 / PY2s = 68) have been given to both Classes (162 students) for a total of 9015 exams administered to individual students. A total of 130 (1.4%) of these exams had to be remediated by 34 (21%) different students. The 34 students have remediated an average of 3.8 (range = 1-8) exams. Out of the 34 remediation students, 4 had to complete course remediation due to failure of one course. Currently SUCOP has only had one student withdraw from the program. This withdrawal was due to medical reasons and the student already has plans to return to school. Implications: Our results show that an exam remediation program as part of the curriculum will help decrease the number of course remediations and may help student retention.

Faculty Attitudes, Experiences, and Outcomes Pre/post Implementation of a Formalized Peer Observation and Evaluation Program. Margarita V. DiValli, Northeastern University, Judith T. Barr, Northeastern University, Michael Gonyeau, Northeastern University, Samuel J. Matthews, Northeastern University, Jenny A. Van Amburgh, Northeastern University, Donna Qualters, Suffolk University. Objectives: 1) Assess pre/post faculty attitudes of the Peer Observation and Evaluation (POE) process in the Pharmacy Practice department; 2) Determine the degree of adherence to POE policies and procedures; 3) Determine types of feedback received; 4) Determine its impact on faculty teaching. Method: Two faculty surveys were administered via SurveyMonkey. Pre-implementation survey collected needs assessment and attitudes regarding POE. After 2 years requiring yearly POE participation, faculty completed a second survey asking similar questions to the first one, plus additional questions regarding adherence to POE policies and procedures, type of feedback received, changes made by the faculty, and evidence of changes in student evaluations or learning. Results: Nineteen faculty (76%) responded to the pre-implementation survey. 63% reported having at least one peer evaluated lecture in the past 5 years. 90% agreed or strongly agreed (A/SA) POE will improve classroom teaching and 61% A/SA POE will improve student learning. 63% A/SA that POE is a better measurement of teaching effectiveness than student evaluations. Everyone expressed willingness to change teaching in response to student and peer feedback. 84% were interested in having their lecture peer evaluated in the upcoming year and 63% were interested in formal POE training. When asked to rank the need for feedback types from 1 (not important) to 4 (most important), the average ratings were: active learning, 2.63; assessment of learning, 2.84; lecture content, 2.63; presentation style, 2.63; classroom climate, 2.63. Post-implementation survey results will be reported at the meeting. Implications: Pre-POE implementation faculty demonstrated interest and need for POE.

First Year Student Perceptions of Performing Clinical Skills Using OSCEs in an Accelerated Pharm.D. Program. Heather F. DeBellis, South University, Kelly P. Jervis, South University, Scott Lancaster, South University, Lilia Z. Macias-Morriarity, South University, Lorie L. Schwartz, South University, Tara Thurmon, South University. Objectives: Objective Structured Clinical Examinations (OSCEs) were incorporated into an accelerated Pharm.D. program during the first professional year to directly observe and evaluate learner performance in mock clinical pharmacy situations. The purpose of this investigation is to identify students’ level of confidence in executing clinical tasks and communicating effectively with mock patients during OSCEs. Method: Students completed an anonymous questionnaire measuring level of confidence in completing multiple clinical skills before and after the OSCEs using a 5-point Likert scale. Topics included but were not limited to blood pressure assessment, blood glucose screening, proper administration of a metered dose inhaler, and selection of an over-the-counter (OTC) product for nicotine replacement therapy. Results: Preliminary results indicate over 50% of students were more confident in their ability to counsel versus select an OTC therapy during OSCEs. Implications: Introduction of OSCEs allows for clinical application of didactic material and the assessment of student clinical skills and decision making. Utilizing OSCEs and the confidence questionnaire will help instructors evaluate gaps in knowledge, clinical skills, and students’ ability to communicate effectively with their patients.

Guiding Principles Fostering Curriculum Schedule Design at a New School of Pharmacy. Michael C. Brown, Concordia University Wisconsin, Douglas A. Meyer, Concordia University Wisconsin, Dean L. Arneson, The University of Oklahoma, Lesley Luehrs, Concordia University Wisconsin, Julie P. Karpinski, Southern Illinois University Edwardsville. Objectives: Concordia University Wisconsin School of Pharmacy (CUWSOP) will matriculate its inaugural Doctor of Pharmacy class in Fall 2010. Creating integrated and novel didactic and experiential curriculum schedules was a priority for faculty. Early development of the entire 8 semester schedule was also critical to assess and justify space needs in the planning of a new CUWSOP building. Method: Faculty created eight guiding principles for schedule development drawing on professional experience, benchmarking with existing pharmacy schools and integrating the CUWSOP mission. These principles focused on 1) core and advanced coursework, 2) practice experiences, 3) assessment, 4) flexibility, 5) interprofessionalism, 6) technology, 7) personnel, and 8) student-centeredness. Faculty then worked to build course, semester, and experiential schedules consistent with these principles. Results: Each of the first six semesters of the curriculum follows a 7-2-7 structure; 7 weeks of didactic education on both sides of 2 weeks of either Introductory Pharmacy Practice Experiences (IPPE) or curricular based assessments. Third year curriculum schedules include one full-day and two half-day opportunities for longitudinal experiential electives. The schedules of all nine laboratory courses ensure availability of upper-class student teaching assistants to work with faculty, encouraging

Though predictive, of NAPLEX performance (r = 0.54, B1 = 0.26 (C195% = 0.16-0.35), B0 = 26.18 (C195% = -7.61-59.97), p < 0.0005). Including individual domain scores in the analysis improved the annual progress assessment-NAPLEX correlation (r = 0.71, p < 0.0005).

Implications: Correlation with and predictability of NAPLEX performance validates the annual progress assessment’s ability to determine P3 student competency. Future P4 assessment may be transitioned to a more OSCE-based, performance focused modality.
individual student skill development and accountability. Attention to creative course scheduling and educational space design allowed for a compact schedule without compromising the 148 credit hour program. **Implications:** The eight guiding principles contributed to the development of an application-focused, student-friendly curriculum schedule. Future curricular and assessment development and refinement will continue to build on these CUWSP guiding principles.

**Health Professions Student Training Program in Wellness Screening.** Gayle A. Hudgins, *University of Montana*, Donna G. Beall, *University of Montana*, Rachael Curran, *University of Montana*. **Objectives:** The goals of the ImProving Health Among Rural Montanans (IPHARM) project are to deliver health screening services and to serve as a model rural ambulatory care practice site for students. **Method:** Student involvement can range from attending a single event to completing a certificate program in geriatric health screening. A certificate program is offered to 3rd year pharmacy students and advanced practice nursing students. To complete the certificate, a student must 1) read and pass tests from 3 modules, 2) attend a 6 hour training session, 3) participate in several health screening events, and 4) plan an event. **Results:** The number of students participating in IPHARM has increased as has the number of students completing the certificate. In 2006-2007, 5 students (all pharmacy) completed the certificate and 11 students attended at least one event. In 2007-2008, 13 students (11 pharmacy and 2 nursing) completed the certificate and 47 students (37 pharmacy, 3 nursing, 5 physical therapy and 2 social work) attended events. In 2008-2009, 18 students (12 pharmacy, 6 nursing) completed the certificate and 38 (29 pharmacy, 4 nursing, 2 physical therapy) attended events. It is anticipated that this year 29 will complete the certificate and at least 26 more will attend events. **Implications:** Geriatric health screening not only provides excellent interdisciplinary training opportunities for health professions students, but also provides a valuable service to rural and underserved patients. We are also investigating whether students who participated in the program are more likely to practice in rural or underserved communities after graduation.

**How do Pharmacy Faculty Teach? Determining Teaching Styles at an Accredited US School of Pharmacy.** Colleen Teean, *University of Connecticut*, Lauren S. Schlesselman, *University of Connecticut*. **Objectives:** To assess for a predominance of teaching styles among pharmacy faculty at one school of pharmacy **Method:** Gra-sha’s Teaching Styles Inventory©, a 40-question instrument, was administered to 22 pharmacy faculty at a research intensive school. The survey identifies 5 primary teaching styles and the degree of preference towards each one. It also identifies clusters of preferences. The results were evaluated in a number of different ways including comparison to published results in other disciplines. **Results:** Although analysis remains in progress, in early results all faculty report high or moderate preference for expert model, 95.3% for formal authority, and 95.4% for delegator. Upon review of clusters, the expert/delegator cluster accounts for the largest percentage (22.7%) of faculty. Pharmacy faculty showed a stronger preference for expert and formal authority than faculty in other previously evaluated disciplines. **Implications:** Teaching styles represent a pattern of beliefs and behaviors that faculty display in the classroom, although is varied classroom settings these patterns will also vary. Each teaching style is associated with advantages and disadvantages. As the other half of the teacher-student interaction, understanding these different teaching styles and their predominance may assist in curricular development.

**How do Pharmacy Students Learn? Determining Learning Styles at an Accredited US School of Pharmacy.** Colleen Teean, *University of Connecticut*, Michael Li, *University of Connecticut*, Lauren S. Schlesselman, *University of Connecticut*. **Objectives:** To assess for a predominance of learning styles among pharmacy students at one school of pharmacy **Method:** Following approval by the university’s Institutional Review Board, the Index of Learning Styles®, a 44 question instrument, was administered to 214 pharmacy students at a research-intensive public university. The survey provides results within 4 domains which were then evaluated in a number of different ways. The 4 domains include perception (sensory vs. intuitive), input (visual vs. auditory), organization (inductive vs. deductive), processing (active vs. reflective) and understanding (sequential vs. global). Correlations were conducted to compare learning styles to demographic data. **Results:** Although analysis is still in progress, early results show within the 4 domains 85% of students show a preference toward sensory perception, 65% toward visual input, and 73% toward sequential understanding. No significant difference is noted between active and reflective processing. **Implications:** Understanding different learning styles and the predominance of them may assist in the development of the most effective curricular activities. Although precisely meeting every students learning style is impossible, recognizing the diversity or unity of their styles can help faculty and curriculum committees to develop curriculums and individual courses.

**Images and Cultures: Understanding Interprofessional Cultures Project Embedded within a Pharmaceutical Care Clinic. Elective.** Karen Bastianelli, *University of Minnesota*, Lynn E. Bye, *University of Minnesota*, Glenn H. Nordehn, *University of Minnesota School of Medicine*, Fred W. Hafferty, *University of Minnesota Behavioral Sciences*. **Objectives:** Images and Cultures: Understanding Professional Cultures Project focuses on the cultures of different health care professions. The purpose of this IRB approved study is to increase the understanding and dialogue between graduate social work, pharmacy, and medical students regarding their respective professions. **Method:** Pharmacy students complete weekly assignments assessing their perceptions of interprofessional roles, teamwork, and various health care topics. Students from the three disciplines will gather in an interdisciplinary discussion of the professional cultures of pharmacy, medicine, and social work. All participants will locate an image that is not copyrighted which speaks to their perception of each of the professions. Students will be asked to share their reasons for selecting the particular photograph, list three commonly held values, norms, and artifacts unique to each discipline, describe their role within their profession, and dialogue about their personal and professional philosophies. **Results:** Previous uses of this curricula show it significantly increases awareness and knowledge of professions’ cultures (p < 0.05). Data gathered from the use of questionnaires (“Interdisciplinary Questionnaire,” the “Professional Perception Questionnaire,” and the “Interdisciplinary Perception Questionnaire”) pre- and post-discussion will be used to evaluate the value of the educational protocol used in this study. **Implications:** The proposed benefit of this study is to collect empirical evidence regarding the effectiveness of using images to increase awareness of professional cultures impacting future interprofessional perceptions and collaborations.

to develop interviewing, assessing, SOAP note writing and patient presentation skills in a large class of 160 students. **Method:** The Professional Skills Development II course has designed and incorporated student directed activities to facilitate the development of interviewing, assessing, SOAP note writing and patient presentation skills related to self care topics. Development of these skills occurs weekly for 12 weeks and is based on student self and peer assessment with feedback. Verbal competency assessments have been incorporated during class to assess the development of these skills and provide personalized faculty-student feedback that targets the strengths and weaknesses in the individual student’s skill set. Each week, a group of forty students (1/4th of the class) will complete the verbal competency assessment and by the end of the semester, all 160 students will have completed three personalized verbal competency assessments. Expectations of the student are greater with each subsequent assessment. These formative assessments facilitate recognition of areas that need improvement, and holds students accountable for deficits identified by faculty. If a student does not perform well on all areas of a verbal competency assessment, detailed constructive feedback is provided and the student is required to complete an additional verbal competency assessment. Impact of these educational methods will be measured using student satisfaction and student performance as assessed by faculty. **Results:** Results will be presented. **Implications:** Implications will be presented.

**Impact of Teaching Development Activities during Residency on Pharmacy Careers.** Teri L. West, The Ohio State University, Puja Patel, The Ohio State University, Maria C. Pruchnicki, The Ohio State University. **Objectives:** Pharmacy schools continue facing the challenge of filling faculty position vacancies due to lack of applicants with adequate academic qualifications. Studies suggest that residents who had opportunities to teach during their residency were more motivated to pursue teaching roles in a pharmacy career. Our purpose is to assess the perceived impact of teaching development/ opportunities as related to the current activities of residency graduates of The Ohio State University College of Pharmacy Community / Ambulatory Residency Program (OSU Residency). **Method:** All OSU Residency graduates will be invited to complete an online survey (www.qualtrics.com). This cross-sectional study will include data from 10+ years of program graduates, who participated in a variety of teaching development activities. Information collected includes demographics, teaching opportunities/experiences during residency, current and prior pharmacy career experiences with various teaching competencies, and individual perceptions of the value of OSU Residency teaching development programs. The survey will consist of Likert-style and open-ended questions. **Results:** Results will reflect the impact of residency training with significant teaching opportunities on early and/or mid-career professional activities, decisions to pursue teaching roles in career pathways, and the perceived value of residency teaching experiences to former residents. **Implications:** Graduates in academic positions may be expected to value residency teaching experiences most highly. Furthermore, results may illustrate that those graduates not currently in academic positions also utilize teaching skills developed during residency in a variety of professional roles.

**Impact of Training with Interactive Computer Software on Performance During a Cardiac Emergency Simulation.** Brenda S. Bray, Washington State University, Megan N. Willson, Washington State University, Douglas L. Weeks, Washington State University. **Objectives:** The intent of this study was to determine whether interactive Advanced Cardiac Life Support (ACLS) computer experiences would enhance performance during a simulated CODE with a human patient simulator. Further, pharmacists-specific knowledge and confidence were assessed. **Method:** Interactive computer experiences were offered through MicroSim®, which allows individual learners to “manage” patients who are experiencing acute cardiac events, including cardiac arrhythmias. Third professional year student pharmacists were recruited through personal contact and informational flyers. Once consented, students were randomized into the intervention group (usual curriculum plus interactive computer experiences) or control group (usual curriculum without interactive computer experiences). Student pharmacists were assessed with a written knowledge exam and a practical cardiac emergency scenario facilitated by a human patient simulation. The simulated CODE was conducted in groups of four students. In addition, confidence to act rapidly and correctly in a CODE situation was evaluated. **Results:** Fifty student pharmacists enrolled in the study with 25 randomized to the intervention group and 25 to the control group. Data collection and analyses are currently underway. **Implications:** A possible benefit to student pharmacists in the intervention group is improved knowledge and skills related to patient care and the role of the pharmacist during a CODE situation. The results of the study may enhance professional knowledge regarding the impact of a computerized, interactive software program when added to traditional curricula.

**Impact of a Didactic Literature Evaluation Course on Student Perception of the Value of Journal Club.** Suzanna Gim, Long Island University, Sally Arit, Long Island University, Bupendra Shah, Long Island University, Anna Nogid, Long Island University. **Objectives:** To examine the effect of a didactic literature evaluation course on students’ perception about the value of journal clubs during advanced pharmacy practice experiences (APPEs). **Method:** A quasi-experimental design utilizing a historical control group will be utilized. Students who graduated in 2009 (non-exposure group) completed a 21-item survey prior to graduation about their perception of the value of journal clubs (for understanding of different study designs, strengths and weaknesses of research studies, relevance to patient care, and presentation skills) conducted during APPEs. A new didactic course on literature evaluation was introduced to third-professional year students (exposure group) in the Spring 2009 semester. These fourth-professional year students are currently preparing journal clubs during APPEs and will be asked to complete the same survey that 2009 graduates had completed this May. Ratings and means for items assessing value of journal club will be compared for the exposure group and the non-exposure group. **Results:** It is anticipated that there will be higher mean scores for perceived value of journal club for the exposure group as compared to the non-exposure group. Teaching students how to critically review clinical research relevant to pharmacy practice is fundamental if we are to promote an evidence-based practice framework in pharmacy practice. Strategies that improve not only students’ expertise in reviewing literature critically but also address their perceived value of these skills, are needed. **Implications:** The process of literature evaluation skills should begin didactically and be followed with application during APPEs to engage pharmacy students in application of evidence-based medicine in practice.

**Impact of Critical Pharmacy Knowledge Courses on the Introductory Pharmacy Practice Experience.** Barbara Kelly, Palm Beach Atlantic University, Elias Chahine, Palm Beach Atlantic University, Jamie L. Fairclough, Palm Beach Atlantic University, Mary J. Ferrill, Palm Beach Atlantic University. **Objectives:** Introductory pharmacy practice experience (IPPE) is an essential part of the pharmacy curriculum. This study was designed to assess students’ beliefs

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Implementation of Interactive “Code Blue” Exercises in the Laboratory Component of a Parenteral Products Course. Joseph A. Dikun, Northeastern Ohio Universities Colleges of Medicine and Pharmacy, Dale E. English, Northeastern Ohio Universities Colleges of Medicine and Pharmacy, Robb McGory, Northeastern Ohio Universities Colleges of Medicine and Pharmacy. Objectives: Little has been developed in the literature involving the implementation of simulation “Code Blue” exercises as a curricular component. Student perspectives on the exercise and application to future practice need to be assessed to ensure continued effectiveness. Method: Students enrolled in a Parenteral Products course engaged in two “Code Blue” laboratory exercises. Pre-lab videos demonstrating mock codes, along with paralleled integration of cardiology physiology course content were used to expand on procedures, drug/physiology relationships, and ACLS algorithms. The exercise consisted of student pairs working together to complete an emergency medication order under time restrictions. While one student is given a trauma box of drugs, syringes, and fluids to prepare medication orders, the second student is assigned the responsibility of completing flow rate calculations based upon patient information and final concentration. Student switch responsibilities on next exercise. To assess, student teams were administered pre- and post-exercise surveys to obtain student perspective on the exercise. Results: Initial observation indicates students view the codes as excellent learning opportunities. Student perspective on the exercise conveyed increased understanding and appreciation of this interdisciplinary process and increased confidence in technique. Analysis of data will be performed and presented upon completion. Implications: Through implementation, students learn the importance of a pharmacist’s role in a code, while gaining hands-on experience in rapid construction of emergency medications. Increased confidence in calculation and technique can allow for individuals to impact on outcomes of simulated mannequin-based Advanced Cardiac Life Support Cases. Lindsay Palkovic, University of the Sciences in Philadelphia, Michael Cawley, University of the Sciences in Philadelphia, Craig B. Whitman, University of the Sciences in Philadelphia, Quinn A. Czosnowski, University of the Sciences in Philadelphia, Laura Finn, University of the Sciences in Philadelphia. Objectives: Emphasizing the push toward active learning, ACPE stresses that student development “should be supported through instructional technologies” and should allow the opportunity to interact with “actual or simulated patients.” The objective was to assess the impact made by computer simulation on the outcome of mannequin-based advanced cardiac life (ACLS) support cases. Method: In the Spring 2010 students in the Principles of Human Disorders and Pharmacotherapeutics Lab were divided into two groups. Groups completed computer simulation or mannequin simulation first and then switched to complete the remaining activity. Students with ACLS certifications and students that completed the simulation in the previous six months were excluded. Mannequin survival, as determined by compliance with ACLS guidelines, will be compared between the two groups. Student satisfaction data were collected using a survey at the end of the class period. Results: Preliminary data: approximately 240 students (40 groups) participated. Four groups were excluded due to previous simulation experience. The group that completed computer simulation first had a mannequin survival rate of 44%. The group that completed mannequin simulation first had a mannequin survival rate of 5%. Implications: As instructors use technology there is a need to determine how students will benefit from new learning strategies and the comparative value of activities. The results of this study may be used to direct how instructors at our institution and other education and clinical institutions use active learning strategies.

**Implementation and Evaluation of Pharmacotherapy Continuing Education Sessions in a Community Pharmacy Residency Program Network.** Ashley R. Branham, University of North Carolina at Chapel Hill, Macary W. Marciniak, University of North Carolina at Chapel Hill, Stefanie P. Ferreri, University of North Carolina at Chapel Hill. Objectives: (1) To develop an opportunity for community pharmacy residents to participate in therapeutic-based discussions within a network of residents, preceptors and directors. (2) To evaluate participant knowledge development and satisfaction with the sessions. Method: In July 2009, community pharmacy residency programs in North Carolina and South Carolina were invited to participate in a series of therapeutic-based discussions. The goals of this series were to enhance disease state management skills, develop resident expertise in presentation delivery, advance preceptor development, and enhance communication among sites. Participation was limited to residents, preceptors, and directors of invited programs. Each resident delivers one 60-minute active learning presentation on an issue commonly encountered in community practice. Starting in February 2010, participants were eligible to receive 1 hour of ACPE-approved continuing education credit. To evaluate this educational opportunity, participants will complete an 11-question survey to assess topic applicability, logistics, satisfaction, and overall learning. Respondents will also provide suggestions for improvement of the pharmacotherapy sessions. Results will be analyzed using descriptive statistics. Results: Approximately 30 individuals participate in the pharmacotherapy sessions. By June 2010, 17 sessions will have been conducted on topics such as diabetes, herals, hypertension, immunizations, and medication therapy management. Results from the survey will be analyzed by the meeting. Implications: Study results will determine if resident-led therapeutic-based discussions are effective at enhancing pharmacotherapy knowledge. If successful, this format could be a model for other residency programs to implement in order to enhance learning, achieve residency objectives, and connect residency programs across a region.

Impact of Using Computer Simulation on Outcomes of Simulated Mannequin-based Advanced Cardiac Life Support Cases. Lindsay Palkovic, University of the Sciences in Philadelphia, Michael Cawley, University of the Sciences in Philadelphia, Craig B. Whitman, University of the Sciences in Philadelphia, Quinn A. Czosnowski, University of the Sciences in Philadelphia, Laura Finn, University of the Sciences in Philadelphia. Objectives: Emphasizing the push toward active learning, ACPE stresses that student development “should be supported through instructional technologies” and should allow the opportunity to interact with “actual or simulated patients.” The objective was to assess the impact made by computer simulation on the outcome of mannequin-based advanced cardiac life (ACLS) support cases. Method: In the Spring 2010 students in the Principles of Human Disorders and Pharmacotherapeutics Lab were divided into two groups. Groups completed computer simulation or mannequin simulation first and then switched to complete the remaining activity. Students with ACLS certifications and students that completed the simulation in the previous six months were excluded. Mannequin survival, as determined by compliance with ACLS guidelines, will be compared between the two groups. Student satisfaction data were collected using a survey at the end of the class period. Results: Preliminary data: approximately 240 students (40 groups) participated. Four groups were excluded due to previous simulation experience. The group that completed computer simulation first had a mannequin survival rate of 44%. The group that completed mannequin simulation first had a mannequin survival rate of 5%. Implications: As instructors use technology there is a need to determine how students will benefit from new learning strategies and the comparative value of activities. The results of this study may be used to direct how instructors at our institution and other education and clinical institutions use active learning strategies.

and confidence levels regarding the impact of critical pharmacy knowledge (CPK) courses on their IPPE. Method: A 1-credit hour CPK course is required for all student pharmacists each semester for their didactic training. Students are presented with essential information that every pharmacist should know irrespective of their practice area, such as: generic name, trade name, primary therapeutic indication and therapeutic class for commonly prescribed outpatient and injectable drugs; common laboratory values; common abbreviations used in pharmacy practice; and monitoring parameters for common disease states. Learning occurs from repetitive self-directed study, online cumulative quizzes and exams with no lectures or discussions. Students return to class for quizzes each week. Students will be surveyed prior to and upon successful completion of each CPK course and IPPE. Statistical analysis of the survey will be performed with the Wilcoxon Signed-Rank test using the SPSS program version 17.0. Results: Only one year of data is currently available. There was a statistically significant difference in the student’s beliefs and confidence levels before and after completion of the first CPK course (p=0.01). Further results are pending. Implications: After only one semester of data, this study demonstrates that offering a CPK course may enhance students’ beliefs and confidence levels in the IPPE and ultimately improve the students’ entire learning experience. Pharmacy educators might consider implementing these courses in their curriculum.
Implementation of an Electronic Medical Record in an Integrated Patient Care Course. Jacob Frick, University of Southern Nevada, Ragini Bhakta, University of Southern Nevada. Objectives: The aim of this project was to modernize the presentation of patient information from a medical record in the didactic curriculum. In addition, this research will obtain student perceptions regarding the use of the newly developed medical record. Method: Throughout the integrated patient care course, students are given pertinent patient information on a single sheet of paper. These “paper cases” were replaced with a simulated electronic medical record (EMR) utilizing the software Microsoft Excel. To create the medical record, four different electronic systems used by healthcare institutions nationwide were researched and analyzed to identify similarities. Once the relevant components were determined, tabs were created within the EMR to replicate various functions found in the electronic data systems researched. Students utilized this electronic chart to extract pertinent patient data to make therapeutic recommendations. The students will be surveyed regarding the usefulness and real-life similarities upon entering clinical rotations. Results: Descriptions, creation instructions, and screen shots of the EMR will be presented. In addition, all data regarding student perceptions will be collected via Likert items. Descriptive statistics will be calculated and presented. Implications: The benefit of this project lies in its attempt to better prepare pharmacy students for medical technology. By providing a realistic approach to extracting pertinent patient information, students could be better prepared to confront this technology on rotations and in clinical practice.

Implementing Health Fair Screening Lectures into the Curriculum: Impact on Participant Knowledge and Student Confidence. Christine Gabrielian, Western University of Health Sciences, Emmanuel Schwartzman, Western University of Health Sciences, Karl Hess, Western University of Health Sciences. Objectives: To describe our pharmacy curriculum in terms of student health fair preparation and participation To evaluate the impact of student pharmacist run health fairs in terms of increasing participant knowledge To evaluate the confidence of student pharmacists towards participation in health fair events Method: At our academic institution, we have incorporated lectures and training sessions for blood glucose, blood pressure, cholesterol, and body fat analysis screenings in the first year pharmacy curriculum to help prepare students for health fair events. During health fair events throughout the 2009 to 2010 academic year, surveys were administered to health fair participants prior to and immediately after each screening to evaluate the impact of student pharmacists towards changing their knowledge. Change in participant knowledge was also correlated with student pharmacists based upon their year in the pharmacy program. To determine how well our curriculum prepares student pharmacists for health fair events, another survey was administered to them prior to the event to evaluate their confidence towards participation in these events. Data analysis will be conducted and analyzed using SPSS. Results: Data analysis is in progress. Results will discuss the impact of student pharmacists on changing participant knowledge of specific disease states and the confidence of participating student pharmacists during health fair events. Implications: By evaluating changes in participant knowledge of specific disease states and correlating these results with the student’s year in the pharmacy program, we will better understand the effectiveness of our curriculum and be able to make improvements for future classes.

Implementing an Oncology Virtual Patient into a Pharmacotherapy Lab Course. Casey Gallimore, University of Wisconsin-Madison, Michael E. Pitterle, University of Wisconsin-Madison, Jill Kolesar, University of Wisconsin-Madison. Objectives: A longitudinal oncology virtual patient has been used in the oncology pharmacotherapy module for over 10 years. The virtual patient was recently migrated to the Virtual Case Module in Moodle at the University of Wisconsin School of Pharmacy to assist students in applying concepts presented in the Pharmacotherapy course. Method: The Virtual Case Module for Moodle allows instructors to develop cases presenting chart information and patient interaction. Moodle allows the Virtual Case Module to use tools such as quizzes and wikis. Students were assigned a virtual patient and followed her through progression of diagnosis of breast cancer, metastatic disease, and end of life care. Pre-lab assignments were created within Moodle to help students assess the patient and provide therapy recommendations. Virtual patients were discussed during laboratory sessions to allow students exposure to all patient case variations. Students will be asked to complete a survey assessing their virtual patient experience. Results: Preliminary data indicates all surveyed students (n=73) felt the virtual patient was an effective teaching tool, and 84% felt the technology was easy to access and navigate. The Virtual Case Module for Moodle provides a user-friendly method for building and editing patient cases, and reviewing student understanding of course material. Implications: The oncology virtual patient will be continued in future semesters using the Virtual Case Module in Moodle. Use of this technology will be expanded to build virtual patient cases relating to additional disease states.

Improving Patient Consultation Skills Using Rapid-cycle Feedback. Jeff Fortner, Pacific University Oregon, Brad S. Fujisaki, Pacific University Oregon. Objectives: Improve student’s patient consultation skills by encouraging them to try new approaches by using an activity with repeated rapid-cycles, immediate implementation of feedback, and lower stress “experimental” interactions rather than “performances” before peers. Method: Using groups of three, 96 first year students acted as Pharmacist, Patient, and Consultant during a series of consultations. Groups had three scenarios each split into three rounds where students took turns playing each of the three roles to experience the scenario from all perspectives. After completing the consult, the Consultant and Patient gave constructive criticism and feedback to the Pharmacist, then positive feedback using a rubric, and finally the Pharmacist conducted the same consult again incorporating the feedback just received. Eight faculty each facilitated four groups by answering questions, providing feedback “in the moment”, and identifying students needing additional assistance. After three 45 minute scenarios, the class was debriefed with general feedback and pearls from the faculty. An anonymous, optional survey of students asked what they liked, didn’t like, and suggestions for improvement. A repeat of the activity in April will incorporate suggestions from the survey and a new survey using detailed Likert scale questions will be given. Results: Survey responses from 42 students were categorized by topic showing the following top three responses in order: Likes- Small Groups, Accessible Faculty, Low Pressure; Dislikes- Not Answered, Do This More Often, Too Long; Suggestions- Do This More Often, Not Answered, More Scenarios. Implications: Students appreciate repetitive, feedback driven, “experimental” consultation activities which include small groups, accessible faculty, and low stress interactions.
Improvisation to Improve First Year Pharmacy Students’ Self-Efficacy toward Patient Communication. Lisa Guirguis, University of Alberta, Vanessa Butt, University of Alberta. Objectives: Pharmacy students often recite information in standard patient interactions in place of actively listening and responding to simulated patient needs. It is hypothesized that improvisation activities may improve students’ confidence to communicate effectively. We assessed: 1) the impact of improvisation exercise on first year pharmacy students’ self-efficacy toward communication skills and 2) pharmacy students’ experiences and perceptions with improvisation in a communication course. Method: In this controlled pre- and post study, the intervention group (lab section 1) had improvisation training and incorporated improvisation into their lab activities during the first eight weeks of a communications course. The delayed intervention group (lab section 2) completed the regular curriculum. After the week 8 standardized patient interaction, the delayed intervention group received the improvisation workshop. Improvisation exercises were selected to enhance focused listening, the ability to initiate and continue conversations, and the development of a conversation without anticipating its progression. Students evaluated their self-efficacy toward communication skills pre- and post their improvisation and interactions with standardized patients. Pharmacy students’ experiences and perceptions were gathered through focus groups and a thematic analysis of reflection assignments on improvisation and it link to communication. Results: Research was approved by the Health Ethics Research Board. Seventy students of 130 (54%) consented to have their course assignments shared for research. Analysis will be completed in spring 2010 Implications: This research will help to determine if improvisation exercises will improve the self-efficacy of first year pharmacy students and describe the student experience and perceptions with improvisation.

Incorporating Pharmacy Practice Experiential Education and Community Outreach in Senior Care into the Curriculum. Joseph A. Woelfel, University of the Pacific, Rajul Patel, University of the Pacific, Mark P. Walberg, University of the Pacific, Suzanne M. Galal, University of the Pacific, Eric G. Boyce, University of the Pacific. Objectives: Introduction: Faculty at the Thomas J. Long School of Pharmacy and Health Sciences developed a unique practice-based outreach course to enhance student geriatric care abilities. This course formally trains students in geriatric assessment-prevention of osteoporosis-falls and requires students to apply their acquired skills to community-dwelling seniors. Objectives: Project goals include: describing student’s practice experience, course mapping to curricular outcomes and University strategic plans, and documenting outcomes related to student abilities, patient outcomes, and course/service assessment. Method: Methods: Outcome measures on student activities, student performance, and patient outcomes were collected. Results: Results: In 2009, 136 first and second-year students completed didactic training with summative median scores of 100% and practicum clinical skills assessment scores of 100%. From July through October 2009, 124 seniors were assisted during nine targeted northern California outreach activities. Data collected by students identified that 100% of the senior participants were at risk for osteoporosis, 94% were at risk for falls, and only 24% of those at-risk took both calcium and vitamin D supplements. Education was provided by students under faculty supervision and has improved knowledge of risk and prevention strategies. At-risk patients were referred to their primary care provider for follow-up. Student evaluations were positive and revealed their ability to directly impact patient well-being. Implications: Implications: Student knowledge of geriatric care is enhanced. Screenings increase awareness of osteoporosis and fall-related risk factors in community-dwelling seniors. Patient outcomes are positively impacted by student efforts.

Incorporating a Medication Therapy Management Certificate Program into the Pharmacy Curriculum. Lauren S. Bloodworth, The University of Mississippi, Leigh Ann Ross, The University of Mississippi, Joel R. Pittman, The University of Mississippi, H. Joseph Byrd, The University of Mississippi, Kristopher Harrell, The University of Mississippi, Ashley W. Ellis, The University of Mississippi. Objectives: To describe and evaluate the incorporation of the American Pharmacists Association’s (APhA) Delivering Medication Therapy Management (MTM) Services in the Community certificate program into The University of Mississippi (UM) School of Pharmacy curriculum. Method: The UM Delta Pharmacy Patient Care Management Project was implemented in 2008 to demonstrate the impact of pharmacist MTM services on clinical, economic and humanistic outcomes and to increase access to health providers/services in the underserved Mississippi Delta. Through this project, School of Pharmacy faculty completed the nationally-recognized APhA Delivering MTM in the Community “Train the Trainer” program. Trained faculty then administered the certificate program to project pharmacists and other Mississippi practitioners. In 2009-2010 academic year, the certificate program will be offered annually to second professional year (PY2) students as part of a required Pharmaceutical Care Lab sequence (two 4 hours sessions) and to the fourth professional year (PY4) students this year only as part of a required Assembly sequence (one 8 hour session). Student and faculty surveys were developed and distributed for self-reflection and to evaluate overall effectiveness. Results: Data collection is ongoing. Evaluation will be completed and results presented in July. Implications: As the practice model evolves, more pharmacists will provide MTM services. Providing this nationally recognized certificate program for students as part of the curricular offerings will equip a large number of future practitioners with the patient care skills and confidence necessary to provide MTM services and will increase student awareness of MTM and its developing role in pharmacy.

Incorporating and Implementing Active Learning Tools Within an Institutional Introductory Pharmacy Practice Experience (IPPE). Hyma P. Gogineni, Loma Linda University, Carl Dominguez, Loma Linda University. Objectives: To determine if an active learning model would enhance student awareness in an institutional IPPE setting. To meet this objective, the IPPE program goals include: 1. incorporation/application of didactics to practice, 2. comprehension of processes within institutional practice, 3. application of learned principles as a foundation for future APPEs, 4. foster an interest in institutional practice. Method: Institutional IPPE for 2nd year students is focused on active learning and applied knowledge. The first active learning component is the weekly submission of test questions. Students work with preceptors to ensure accuracy and validity of the questions. These questions are then compiled and reviewed by course coordinators and feedback is provided. A final exam is derived from the students’ weekly questions to assess their applied knowledge. The second active learning element involves a project in which the student develops a plan to improve the pharmacy process in a specific area. Results: Pending. Implications: Developing effective and hands-on IPPE experiences in an institutional setting have been a challenge for many schools of pharmacy. The institutional IPPE program has been evolving at Loma Linda University School of Pharmacy. Previous models have been structured
around the diversity of the experience, while the current model focuses more on active learning. The writing of test questions forces the student to reflect on the pharmacy processes within an institutional setting. Completion of the project, allows the student to gain insight into the inner workings of an institutional pharmacy practice setting.

Incorporation of Medication Regimen Review and Medication Therapy Management Components into an Advanced Practice Course. Steven J. Crosby, Massachusetts College of Pharmacy and Health Sciences-Boston, Catherine Taglieri, Massachusetts College of Pharmacy and Health Sciences-Boston, Paul J. Kiritsy, Massachusetts College of Pharmacy and Health Sciences-Boston, Joseph Ferullo, Massachusetts College of Pharmacy and Health Sciences-Boston. Objectives: Advanced Practice Management is a PY3 course, integrating didactic concepts in disease-state management with simulated practical experiences. Recognizing the importance of training pharmacy students in the critical evaluation of medical information and fostering skills in medication therapy management, a medication regimen review component was developed and implemented. Method: Electronic charts for simulated patients were generated and were composed of demographic data, extensive medication profiles, diagnoses, quantitative lab data, social history, and written “patient notes” presenting additional subjective and objective data. An inquiry, requiring a complete review of the patient profile and synthesis of information provided in tertiary literature, was presented orally to the student by a pharmacy practice faculty member. Inquiries were multi-faceted, addressing the evaluation of qualitative and quantitative diagnostic criteria and corresponding therapeutic treatment modalities, opportunities for the suggestion of treatment modifications via alteration of dosages or the initiation of different treatment options, evaluation and mitigation of adverse drug events, and pharmacoeconomic considerations. Results: Upon completing a review of the patient profile (30-45 minutes), students provided an oral response, individually, to faculty. This initiative was assessed via a comprehensive assessment rubric, evaluating communication skills, accuracy of response content and validity of therapeutic recommendations, drug literature evaluation, and presentation competency. Implications: The addition of this component introduces and fosters increased practical experience with medication therapy management via integrated case discussions in advance of APPE clinical rotations.

Integrating Pharmacy Students into the Curricular Mapping Process. Abir Kanaan, Massachusetts College of Pharmacy and Health Sciences-Worcester, Jennifer L. Donovan, Massachusetts College of Pharmacy and Health Sciences-Worcester, Paul P. Belliveau, Massachusetts College of Pharmacy and Health Sciences-Worcester. Objectives: The Accreditation Council for Pharmacy Education (ACPE) requires schools of pharmacy to foster collaboration between administration, faculty and students. ACPE Standard 22 states that schools “. . . must consider student perspectives and include student representation, . . . in assessment and evaluation activities”. Student representation is mandated on our assessment and curriculum committees and participation in assessment activities including curricular mapping is encouraged. Objective: To describe our efforts to incorporate pharmacy students in the mapping of predefined Student Learning Outcomes (SLOs) to specific course objectives. Method: Method: The Assessment Committee derived eleven SLOs from ACPE standard 12 to create the school’s curricular map. The Curriculum Committee then mapped all didactic and experiential courses to these SLOs and identified areas for improvement. Faculty were required to implement changes to improve on the delivery of the curriculum and update the map accordingly. A pilot study was initiated to incorporate pharmacy students in process of linking SLOs to core course objectives and updating the map. Measurements included whether agreements exist between: 1) faculty and student assessment of SLOs-linked objectives and 2) faculty and student updates of the map. Results: Preliminary Results: SLOs were linked to objectives from 12 courses. Agreement was achieved in 5 courses; 3 were considered building block courses (and not directly linked to SLOs) and SLOs-linked objectives were agreed upon in 2. Additional data is currently under evaluation including agreement on the curricular map. Implications: Implications: This activity provides opportunity for student collaboration on an initiative which is beneficial to students and allows completion of important committee work.

Integration of Physical Assessment and Triage Skills into a College of Pharmacy Curriculum. Robb McGory, Northeastern Ohio Universities Colleges of Medicine and Pharmacy, Michelle L. Cudnik, Northeastern Ohio Universities Colleges of Medicine and Pharmacy, Daniel L. Krinsky, Northeastern Ohio Universities Colleges of Medicine and Pharmacy, Seth P. Brownlee, Northeastern Ohio Universities Colleges of Medicine and Pharmacy, Dale E. English, Northeastern Ohio Universities Colleges of Medicine and Pharmacy, Werner J. Geldenhuys, Northeastern Ohio Universities Colleges of Medicine and Pharmacy. Objectives: Limited access to health care increases the public’s desire to self-treat new or ongoing symptoms. Pharmacists are often the initial point of contact as patients search for remedies; therefore pharmacists need skills to triage symptoms and perform necessary physical assessments to determine the appropriateness of self-care. Method: Patient assessment skills are inserted into several courses within the curriculum beginning with an interprofessional course on professionalism. This is followed by courses in OTC products, Natural Products, Pharmacotherapeutics I, II and III and advanced physical assessment. Course material is focused on the management of patient symptoms. Assessment skills for symptoms are based upon the QuEST SCHOLAR process and physical evaluation of simulated conditions. A physician skilled in teaching physical assessment participates in each course to provide perspective on what complaints need referral. These patient-centered skills are utilized in community IPPE rotations when assisting in OTC product selection. Results: Students develop skills in performing common physical assessments (vital signs, foot exams, heart sounds, etc) as well as assessing patient symptoms throughout all three years of didactic learning. All students successfully display skills in practical examination assessments during the Pharmacotherapeutic courses. Student involvement in OTC selection on IPPE rotations is robust and effective. Implications: Pharmacists take an active role in assisting patients with the selection of self-care products. We anticipate that teaching these skills to students will result in more active participation in patient assessments. Patients with specialized needs will be better triaged and referred by pharmacists who can adequately assess symptom severity.

Interprofessional Education Curricular Mapping Across Four Health Sciences Programs at the University of Washington. Nanci L. Murphy, University of Washington, Grace Landel, University of Washington, Susan Marshall, University of Washington, Diana Taibi, University of Washington. Objectives: Challenges to successfully implement and sustain a core IPE curriculum include the following: scheduling difficulties, limited space and resources, cultural differences, and integrating cohesive learning activities based on the knowledge and skill level of students. In an effort to circumvent these barriers, faculty from the Schools of Medicine, Nursing, Pharmacy
and the Physician Assistant Program conducted a curricular mapping exercise with the following objectives: 1. Develop a common set of desired interprofessional competencies. 2. Identify shared opportunities for learning and assessment throughout each school’s core curriculum, and 3. Provide recommendations on optimal times to integrate interprofessional communication and quality improvement modules.

**Method:** Thirty-nine interprofessional competencies related to teamwork, clinical reasoning, clinical procedures, medical database and informatics, health systems improvement, professionalism and ethics were developed. Curriculum leads from each school mapped competencies to educational outcomes, performance measures, timing, and where the learning occurred (lab, lecture, seminar, experiential settings). Authentic learning activities such as simulation and OSCEs were specifically identified. Based on a prior experience with an acute care simulation exercise, therapeutic topics were also mapped.

**Results:** Curricular mapping results will be presented. Benefits of this method include a heightened understanding of each other’s programs, increased opportunities for collaborative case development and simulation activities, sharing of assessment tools, and enhanced prospects for interprofessional faculty team-teaching. The map will need to be continually updated as curricular revisions occur. **Implications:** The curricular map will serve as a helpful guide for the integration of new IPE curricular themes in a spiral curriculum.

**Level of Confidence of Practicing Pharmacists in Caring for Older Adults.** Paula A. Thompson, Samford University, Patricia B. Naro, Samford University, Maryam Iranikah, Samford University, Paul W. Jungnickel, Auburn University, Robert H. Schrimsher, Samford University. **Objectives:** To survey practicing pharmacists about education and training they have received, both during and after pharmacy school, concerning issues relating to geriatrics and gerontology. Their level of confidence in addressing the needs of their older patients will also be assessed. **Method:** A survey instrument has been developed which allows non-technical users to create and administer surveys, gather results, and view statistics. The survey instrument will be comprised of geriatric pharmacy-related questions with yes/no, fill-in blanks, and multiple choice questions. Links to the online survey instrument will be sent via email to alumni of the Auburn University School of Pharmacy and the Samford University School of Pharmacy. Through the accompanying message, participants will be assured of confidentiality and anonymity. Survey data will be analyzed by descriptive statistics, which the program has the capability to perform. The program also has the capability to export data to other, more advanced statistical programs. **Results:** We will evaluate the degree of confidence in geriatrics issues for pharmacists currently in practice. We will also attempt to correlate this with the level of education that they received in pharmacy school and/or the additional training that they have voluntarily undertaken. We will also describe the changes occurring over time in geriatrics education for the two participating institutions. **Implications:** Information from this survey will be used in refining the curricula at the participating schools and in designing continuing education programming to meet the needs of practicing pharmacists. It is possible that the scope of the investigation will subsequently be broadened to include other geographical areas.

**Motivations for Pharmacy Students to Join Professional Organizations.** Gina M. Prescott, University at Buffalo, The State University of New York, Nicholas M. Fusco, University at Buffalo, The State University of New York, William A. Prescott, University at Buffalo, The State University of New York. **Objectives:** To identify what motivates pharmacy students to join professional organizations, so as to develop strategies to foster student membership, better meet the needs of student members, and promote professional awareness and leadership within the profession of pharmacy. **Method:** A twenty-three (23) question anonymous on-line survey using Survey Monkey® regarding demographic information, professional organization membership, leadership positions held within professional organizations, and reasons for joining and/or pursuing leadership positions within a professional organization was constructed and sent to each ACPE-accredited (full and candidate status) school of pharmacy. Survey questions were multiple-choice or answered with a 1 to 5 Likert scale, with free text boxes for write-in responses. **Results:** Survey responses are ongoing; approximately 1050 students from 32 schools of pharmacy (34% private and 66% public) have completed the survey. Distribution was equal among all professional schools. Among surveyed students, 87% indicated membership in a professional organization, 53% of whom have held or hold a leadership position. When joining a professional organization, it was very important to students that the organization was in their area of interest, and important to students that the organization offered student programming, career development aids, and networking opportunities with other pharmacy professionals, and that a faculty member whom they respected was involved within the organization. Data analysis will be completed March 31, 2010. **Implications:** To our knowledge, this is the first study to assess student motivation for joining professional organizations. This survey will assist professional organizations and pharmacy educators to better promote membership and encourage active participation among student body.

**North Carolina Pharmacy Based Immunization Initiatives.** Mary M. Johnson, Campbell University, Gabrielle F. Morgan, Campbell University, Brenda F. Blackman, Campbell University, Stephen C. Dedrick, University of North Carolina at Chapel Hill, Amanda Fuller, NC Division of Public Health, Joy B. Greene, Wingate University. **Objectives:** North Carolina (NC) pharmacists are getting creative in their efforts to increase the number of immunizing pharmacists in response to 2009 H1N1. NC pharmacy rules allow pharmacists to immunize adult patients with influenza, pneumococcal and zoster vaccines. With the overwhelming need to immunize against novel 2009 H1N1 influenza, a temporary authority to immunize those 14 years and older took effect on October 14, 2009 and will continue until July of 2010. With assistance from NC Division of Public Health, all three schools of pharmacy collaborated to increase the number of trained pharmacists through the APhA Pharmacy-Based Immunization Certificate Program. **Method:** Campbell University College of Pharmacy and Health Sciences, UNC Eshelman School of Pharmacy and Wingate University School of Pharmacy worked together to provide support staff, faculty trainers and assistant trainers. Program locations were identified by utilizing data from the NC Board of Pharmacy. An email blast from the board was delivered mid November with the “Call to Action” for NC pharmacists to participate. **Results:** As of January 17, 2010, 613 pharmacists have been trained during this six week campaign, representing approximately a 50% increase in the number of immunizing pharmacists available for NC. **Implications:** With additional certified pharmacists, access to vaccine for NC residents will be increased. A future survey will be conducted to assess the willingness of the participants to implement immunizations into their current practice, as well as volunteer for mass clinic settings within the state.

**Operation Safe Camel: A Full Scale Exercise Utilizing Student Pharmacists & Faculty in Disaster Response.** Mark Moore, Campbell University, Robert S. Leeds, Duke University Medical Center/
Outcome Evaluation of Interprofessional Education Using Objective Structured Clinical Examination (OSCE) as an Assessment Tool. David Q. Pham, Western University of Health Sciences, Siu-Fun Wong, Western University of Health Sciences, Vikrant Vats, Western University of Health Sciences, Arezoo Campbell, Western University of Health Sciences, Eunice P. Chung, Western University of Health Sciences, Emmanuelle Schwartzman, Western University of Health Sciences, Micah Hata, Western University of Health Sciences. Objectives: Beginning January 2010, Western University of Health Sciences requires all first year students from the colleges of Osteopathic Medicine, Allied Health (Physician Assistant, Physical Therapist), Pharmacy, Graduate Nursing, Veterinary Medicine, Optometry, Dentistry, and Podiatry to enroll in a newly implemented interprofessional education (IPE) course using patient case-based small group discussions. This study is designed to determine if IPE will enhance student pharmacists’ ability to recognize non-verbal presentation of symptoms and recommend appropriate referrals to other health care professionals. Method: This is a single center prospective study using a pre-post intervention study design. The student pharmacist subjects are blinded to the study objectives and the conduction of the study. Two different OSCE cases involving a patient with non-verbal symptom presentation to warrant the student pharmacists to suggest referral for further management were designed. The first OSCE conducted in December 2009 will serve as the pre-intervention data. Following a 10 week IPE course, a second OSCE conducted in April 2010 will serve as the post-intervention data. Both cases require similar cognitive level assessments by student pharmacists. A 4-item checklist evaluation tool is used for pre- and post-interventions after a 10-week intervention. Pair-wise comparisons and multiple regression techniques will be used for data analysis and examine the relationship of multiple covariates to the performance of the student pharmacists. Results: The study is in progress and the results will be presented in July 2010. Implications: The results will measure the impact of IPE in the student pharmacists’ ability to incorporate a more holistic approach to patient management.

Overactive Bladder Disease in an Ambulatory Population. Jamie L. Kearns, Duquesne University, Kevin J. Lynch, Pfizer Inc. Objectives: Overactive Bladder (OAB) is a symptom complex which consists of urinary urgency with or without urge incontinence, increased urinary frequency and nocturia. Despite the growing prevalence of OAB and its diagnosis in patients in institutionalized care, it appears to go largely undiagnosed in an ambulatory population. The objective of this study is to determine the prevalence of overactive bladder in an ambulatory population, specifically the likelihood that an individual has OAB, and whether this condition has been diagnosed, treated, and the patient’s satisfaction with their current treatment. Method: A validated urinary incontinence screening survey (OAB-V8) and informed consent form are administered to patients 18 to 89 years who are seen during community health screening events. These screening events occur on a free wellness and disease management mobile unit. The information collected on the OAB survey include gender, age, current medications, quality of life assessment questions and an eight question OAB screening tool which is used to assess the presence of possible OAB. Surveys will be distributed through the wellness screenings until adequate data is captured. Results: Descriptive analysis and statistics will be used. Demographic variables and frequency of discrepancies will also be collected and reported. Implications: Overactive bladder is a prevalent disease state in the ambulatory population; however it is largely undiagnosed in this group. Simple screening assessments such as this survey may be used by pharmacists to assess whether a patient has potential OAB and if they are receiving evidence-based treatment.

Pain Passport: A Methodology for Assessing Competency in Pain Pharmacotherapy. Pauline A. Cawley, Pacific University Oregon, Kenneth C. Jackson, Pacific University Oregon. Objectives: To develop and apply an organized methodology to assess student competency in pain pharmacotherapy core knowledge and application skills during a capstone Pain Pharmacotherapy block. Students worked in teams to complete pain therapy activities including: pain assessment, equi-analgesic dosing, safe-medication practices in the various routes of analgesia administration, dose escalation/de-escalation, and monitoring with follow-up. Teams were tasked with ensuring all members were comfortable with the materials and skills applications. Faculty assessed each of the skills contained within the Passport by reviewing the assignments and then conducted a short oral assessment of understanding and application capability. The Pain Passport standardized the areas of competency assessed and also served as an assessment rubric. Results: Comparison of examination performance data for students completing the Pain Passport activities (Academic Year 1009/10), versus students in the prior academic year who covered the same didactic content without the associated Passport activities, will be presented. Positive responses were received from students in the end of block survey, with favorable feedback relating
specifically to the perceived value of this applied clinical skill activity. **Implications:** This tool provided an organized modular approach to competency assessment in pain pharmacotherapy. This approach is now integrated into our pain pharmacotherapy block, and will be expanded for application to other areas of pharmacotherapy assessment.

**Pens and Needles: Assessment of Parenteral Compounding Skills Prior to the Introductory Experiential Courses.** Kenneth L. McCall, *University of New England*, Matthew Lacroix, *University of New England*, Emily Donrbaser, *University of New England*, Wesley R. Zemrak, *University of New England*. **Objectives:** To assess parenteral compounding skills after completion of a laboratory module in the first professional-year of the Doctor of Pharmacy program. **Method:** A five week laboratory module within a pharmacuetics course was implemented with the intention of developing essential student skills prior to the introductory pharmacy practice experiences (IPPEs). Students were assessed with grading rubrics for appropriate hand washing and gowning techniques, cleaning a horizontal flow hood, and manipulating low-risk parenteral products. Upon completion of the module, students demonstrated aseptic technique by passing a low-risk growth medium test. The presence of microbial contamination (solution turbidity) indicated failure and students were allowed to remediate the growth medium test if necessary. **Results:** The results of the technique assessments and growth medium test are pending. **Implications:** The technique assessments and growth medium test will validate student competency prior to experiential coursework. Faculty and student perceptions about the laboratory learning experience will be explored.

**Personal Health Habits Assessment as a Learning Tool to Guide Healthy Lifestyle Initiatives in PY1 Students.** Mary M. Piascik, *University of Kentucky*, Kenneth Record, *University of Kentucky*. **Objectives:** * survey students’ personal health habits to assist them in choosing a focus for the semester-long required personal behavior modification project (BMP) * identify trends in students’ health habits to guide development of initiatives for students to achieve a healthier lifestyle **Method:** Students complete an anonymous 60 question survey (modified version of Health Management Resources© survey; Boston MA) during the first week of the semester. The survey addresses 5 core areas: smoking, alcohol consumption, exercise, healthy diet and stress management. Following survey completion, students identify their semester-long BMP focus. **Results:** Survey data were collected from 2005-2010 (N = 737 students). In the five core areas surveyed: 5.4% of students were smokers. 5.2% of students reported drinking >14 alcoholic drinks/week. 8.5% of students met American Heart Association recommendations for fruit and vegetable consumption. 42.6% reported eating high fat desserts and snack foods 3-6 times/week. 68% of students spent <2 hours/week doing moderate exercise. 53.3% of students reported they were “often stressed but coping well”. Students chose the following BMPs from the five core areas: smoking cessation, 2%; reduced alcohol consumption, 0%; dietary modification, 22%; increased exercise, 58%; stress management, 0%. 52% of students reported that they were highly successful in achieving their goal at the end of the project. Trending data from 2005-2010 will be analyzed. **Implications:** Data suggest there is room for student improvement on healthy behaviors in all five core areas. Future initiatives will target opportunities for students to continue and improve upon healthy habits established during the BMP.

**Pharmaceutical Care of Diabetes - An Elective Course.** Jasmine D. Gonzalvo, *Purdue University*, Deanna Kania, *Purdue University/Roelbush VAMC*, Christy Nash, *Purdue University/Mathes Pharmacy*. **Objectives:** The Pharmaceutical Care of Diabetes elective was offered to third professional year students at Purdue University to expand knowledge and gauge attitudes related to diabetes care. The Pre and Post Course Assessments were administered to assess student perceptions of knowledge related to diabetes gained throughout the course. The Jefferson Scale of Empathy (JSE) was used to assess attitudes towards care of patients with diabetes before and after the Becoming a Patient with Diabetes (BPD) assignment. **Method:** Students were required to take the online Course Assessments at the beginning and end of the semester. Innovative activities and assignments, including videoconference technology with live patients, were utilized in the course to challenge students in a variety of ways. Students completed the online JSE assessments before and after completion of the BPD assignment. The assessments were anonymous, therefore the students submitted statements of completion to verify completion of all assessments. **Results:** Data collection is complete, however, data analysis will be complete by the 2010 AACP meeting. **Implications:** Through preliminary analysis, data from this course reveal favorable results. Pharmacy Practice faculty at other institutions would be able to develop similar diabetes courses or implement similar assignments in other courses, which may have a similar positive impact on students.

**Pharmacy Student Perceptions and Performance in an Elective Internal Medicine Lecture and Practicum and Beyond.** Carrie A. Sincak, *Midwestern University Chicago College of Pharmacy*, Meri Hix, *Midwestern University Chicago College of Pharmacy*, Justin M. Schmidt, *Midwestern University Chicago College of Pharmacy*. **Objectives:** To describe the effect of various active learning techniques on student confidence in specific clinical skills. **Method:** An internal medicine elective course was offered with an optional practicum portion. The practicum employed various active learning techniques to practice clinical skills such as application of evidence-based medicine, efficient use of an electronic chart, and concise decision-making. Pre- and post-course surveys of student confidence in these skills were administered to consenting students enrolled in the didactic portion during the 2008-2009 academic year, and separate surveys were administered to those enrolled in the practicum portion to assess the perceived value of the techniques. Follow-up surveys are planned for students upon completion of advanced pharmacy practice experiences. **Results:** One hundred and fifty paired surveys and 26 practicum surveys were analyzed. There were no baseline differences between didactic only and practicum enrollees in self-reported GPA or previous healthcare experience. Confidence in most areas significantly improved (p<0.05) from baseline for all students. When compared to didactic only enrollees, practicum enrollees scored their confidence significantly higher in “ability to determine relevance of laboratory and diagnostic patient data.” Exam performance did not differ between didactic only and practicum groups. The electronic chart and question bowl techniques were perceived to be most valuable. **Implications:** Offering an optional practicum might improve confidence with respect to the understanding of the relevance of diagnostic and laboratory data for those who enroll. Electronic chart and question bowl learning strategies may result in student perceptions of significant contributions to their education.

**Pharmacy Students Reveal a Sensitive Side: Assessing Student Counseling Skills on Sensitive Topics using OSCEs.** Kelly Scolaro, *University of North Carolina at Chapel Hill*, Donald J. Woodyard, *University of North Carolina Chapel Hill*, Melissa M. Dinkins, *University of North Carolina at Chapel Hill*. **Objectives:** To evaluate
students’ confidence and ability to counsel patients on sensitive topics using Objective Structured Clinical Examinations (OSCEs) and an online survey. **Method:** First year students are introduced to patient counseling as part of the pharmaceutical care lab (PCL). Spanning five semesters, the PCL curriculum offers opportunities for students to learn and practice difficult communications, including counseling on sensitive topics such as sexually transmitted diseases (STDs) and cancer. Students’ ability to counsel on sensitive topics is assessed in an OSCE during the fall of the third year. The OSCE experience consists of seven cases: four standard medication counseling cases and three sensitive topic cases. The first of these sensitive cases addresses condom use for prevention of sexually transmitted diseases. The second case involves counseling a patient with newly diagnosed HIV. The third case involves a patient with end-stage breast cancer. As a follow up, an online survey will be administered to the third year class in April 2010 to assess their comfort level with counseling patients on sensitive topics. **Results:** The mean OSCE scores (n = 144) on the three sensitive topic cases were: 85.3%, 74.9%, and 80.8%. The scores on the sensitive topic cases were significantly lower (p = 0.03) than the scores on the non-sensitive topic cases, which were: 88.3%, 88.5%, 92.7%, and 86.1%. **Implications:** Based on the OSCE score data, more education and practice may be needed to improve student performance when counseling patients on topics of a sensitive nature. The survey results will show student confidence with this skill.

**Pharmacy Student Use of Personal Digital Assistants (PDAs) and Medical Software.** Forrest Batz, University of Hawaii at Hilo. **Objective:** To evaluate the uses and perceived utility of personal digital assistants (PDAs) and medical software among students in a Doctor of Pharmacy program. **Method:** All UHH COP class of 2011 students received PDAs and Epocrates® and Lexi-Comp® medical software programs prior to summer IPPE hospital rotations between their P2 and P3 academic years. All UHH COP class of 2012 students received PDAs and both medical software programs prior to starting their P2 academic year. Before distribution of PDAs, students were surveyed about prior PDA/smartphone use and experience with medical software. A follow-up survey will be conducted in May 2010 to evaluate the comfort level of students using PDAs, purposes and frequency of use, perceived utility of PDAs and medical software, and use of non-PDA drug information resources. **Results:** Initial data reveals 16/53 respondents owned a PDA and 15/68 owned a smartphone before PDAs and software were distributed to all class of 2011 and 2012 students. 40/68 skipped the question asking how often they used a PDA/smartphone as a drug information resource. Among respondents to the question, 9/28 used their device once a day and 7/28 more than once daily as a drug information resource. Additional data, available in May 2010, will be presented in this poster. **Implications:** Implications of this research include understanding student perceptions of the utility of PDAs in pharmacy education and evidence for decisions involving funding of handheld devices and medical software for pharmacy students.

**Practice of New Pharmacists following a Diabetes-emphasis Curriculum versus General Pharmacy Education.** Gina J. Ryan, Mercer University, Renae J. Chesnut, Drake University, June F. Johnson, Drake University, Joseph T. Dye, Mercer University, Haomiao Jia, Columbia University College of Nursing, Peggy S. Odegard, University of Washington. **Objectives:** The objective of this study was to determine the post-graduate practice outcomes associated with a diabetes-emphasis program that was part of a PharmD curriculum at two pharmacy programs. **Method:** An online survey was sent to 93 graduates of two diabetes-emphasis programs and 94 control graduates. Graduates were asked to report how frequently they either educate patients on diabetes self-care activities or perform diabetes-related patient care skills, rating their ability to do so as poor, fair, good, or excellent. **Results:** The survey response rate was 26.7 % (N=48); 69.2 % of the diabetes-emphasis graduates train at least one patient per week in diabetes self care compared to 64.7% of the control group (P=1.0). More diabetes-emphasis graduates (84.6%) perform at least one diabetes-related patient care skill per week versus the control group (70.6%, P=0.45), and rate their ability to teach diabetes self-care as good/excellent compared to the control group (34.5% versus 23.5% (P=0.08). Program participants also rate their ability to perform diabetes-related clinical skills as good/excellent (42.3%) more frequently than the control group (23.5%, P=0.04). **Implications:** Diabetes-emphasis program participants report a higher confidence in their ability to perform diabetes-related clinical skills. There is a non-significant trend in ratings of program participants’ ability to teach diabetes self-care. While these preliminary results suggest that a diabetes-emphasis program that is part of a PharmD curriculum does not change practice of graduates, responses are still being collected to increase power. Complete results will be presented.

**Pre-pharmacy and Pharmacy Student use of Social Networking Sites.** Rebekah M. Jackowski, The University of Arizona, Edward P. Armstrong, The University of Arizona. **Objectives:** The use of social networking sites has increased in our culture. Many of these sites are used for professional use as well as to network with family and friends. The increased use of these sites can blur the lines between professional and personal lives. A questionnaire has been administered to pre-pharmacy and pharmacy students addressing the student’s use of social networking sites, how they use these sites, and the types of information being posted to the sites. **Method:** The questionnaire consists of 35 questions regarding the use of social networking sites and 4 demographic questions. Issues addressed include use of these sites in current or past courses, building relationships with professional colleagues, and appropriate content. Participants have been recruited using a listserv of pre-pharmacy students participating in a pre-pharmacy club and students in their fourth professional year at a college of pharmacy. First, second, and third year pharmacy students were invited to participate in a didactic classroom. **Results:** Data analysis is ongoing. The questionnaire has been administered to 925 pre-pharmacy students and 369 pharmacy students. **Implications:** The results of this study are intended to bring awareness to the pharmacy profession about the current and proposed future use of social networking sites. Additionally, the results will raise awareness of professional use of these types of sites, the types of information posted to these sites, and potential uses to further the education of pharmacy students and pharmacists.

**Preferred Communication Methods among Pharmacy Students.** Catherine E. O’Brien, University of Arkansas for Medical Sciences, Schwanda K. Flowers, University of Arkansas for Medical Sciences, Nalin Payakachat, University of Arkansas for Medical Sciences, Cindy D. Stowe, University of Arkansas for Medical Sciences. **Objectives:** To discover preferred communication methods among current pharmacy students at our institution and inform our decisions about how faculty communicate with students. **Method:** This was a written survey given to all pharmacy students currently enrolled for the spring 2010 semester. A preliminary analysis of responses to items regarding preferred communication methods for different purposes was conducted with the first 92 of 380 surveys. Further analysis will
include comparisons between classes, genders, demographics, and learning style. **Results:** The response rate was greater than 75% of the student body. Of the first surveys analyzed, most respondents were senior pharmacy students (63%), 58.7% were female, the mean age was 27 years, and the mean reported grade point average was 3.03. For communicating with faculty and for professional networking, e-mail was most preferred and social networking sites were least preferred. For communicating with classmates for social or study purposes, texting was most preferred and Blackboard was the least preferred. **Implications:** Communication methods continue to evolve and young adults are most often the first adopters. It is crucial to periodically reevaluate how we communicate with our students and assess whether or not we are using the most effective means. Surveys such as this one can help to inform our decisions and to choose the methods that will be the most effective. Analysis is ongoing and will be completed by the 2010 Annual AACP Meeting.

**Problem Based Learning in a Critical Care Elective.** Kimberly L. Tackett, South University, Pamela F. Hite, South University, James W. Fetterman, South University, Gregory V. Stajich, South University. **Objectives:** To provided insight into the practice of the critical care practitioner in order to prepare students for participation on a multidisciplinary critical care team during their advanced pharmacy practice experience (APPE) rotations. **Method:** Introduction to Critical Care Pharmacy was added to the ninth quarter of the South University accelerated curriculum to introduce students to critical care concepts before beginning their advanced practice rotations. The course utilized a problem based learning (PBL) format with the class divided into small groups to work as a team throughout the quarter. A progressive patient case format was used during the course, allowing students to identify learning issues as the case progressed as well as encouraging critical thinking skills. Students presented findings in a 20-minute presentation to the class to develop effective skills for delivering in-services. Additional requirements for the course included team development of a pharmacy based protocol, journal club and drug monograph presentation. **Results:** The initial offering of the course was assessed midway through the students APPE rotations to gauge students’ perception of the courses contribution to their knowledge during clinical rotations. Students’ overall perception of the course was that the format did contribute to their skills during rotation across several different clinical sites. **Implications:** Utilizing problem based learning within an elective course enhanced students’ clinical knowledge and skill set development.

**Professional Electives: What is Offered, What Are Students Taking, and What Do Students Want?** Jennifer A. Sannee, University of Missouri - Kansas City, Linda S. Garavalia, University of Missouri - Kansas City, Tatum Mead, University of Missouri - Kansas City. **Objectives:** The Accreditation Council on Pharmacy Education Standards require that elective courses provide students with multiple opportunities to gain an awareness of potential career choices and to cultivate personal interests. This project will identify currently offered professional electives in pharmacy programs and investigate pharmacy students’ choices and preferences for electives. **Method:** An Internet search of professional electives offered by 115 pharmacy programs will be completed. Programs not posting a list of professional electives online will be contacted and asked to send a list of their electives to the investigators. The investigators will identify trends in the type of electives offered and create categories of electives based on these trends. In addition, students enrolled in a midwestern school of pharmacy will be surveyed to determine which electives had been taken, were presently being taken, and were intended to be taken in the future. Students will also be asked to identify electives that were desired, but not offered by the school and any barriers experienced in enrolling in electives. **Results:** The following information will be presented: numbers of schools with an available list of electives, numbers of schools offering certain categories of electives, and the average number of elective categories offered at schools. Data from the student survey will be summarized. **Implications:** Identifying the most common current offerings across pharmacy programs provides a point of comparison for programs. Understanding student selections and preferences for electives as well as barriers to enrollment assists curricular planners in meeting students’ needs and interest areas.

**Promoting Safe Medication Disposal in Nebraska.** Jennifer A. Tilleman, Creighton University, Marcia J. Mueting, Nebraska Pharmacists Association, Samuel C. Augustine, Creighton University. **Objectives:** In response to concerns with traces of pharmaceutical and personal care products found in drinking water across the United States, the Nebraska Pharmacists Association has partnered with the Groundwater Foundation, the Nebraska Department of Environmental Quality, the Nebraska Board of Pharmacy, and the Lincoln-Lancaster County Health Department to create the Nebraska MEDS (Medication Education on Disposal Strategies) Program. The Nebraska MEDS Program will focus on educating patients across Nebraska about proper disposal of prescription and over-the-counter medications. **Method:** Magnets featuring the American Pharmacists Association’s SMARXT DISPOSAL TM message regarding proper disposal of medications were sent to each community pharmacy in Nebraska for the distribution to consumers when prescriptions are dispensed. The second phase involved using promotional displays at local public libraries with bookmarks also featuring the SMARXT DISPOSAL TM message. The displays are rotated to a new site each month. **Results:** In August of 2008, a facsimile needs assessment was sent to community pharmacies in Lancaster County, Nebraska. Eighty-eight percent of the pharmacies responding noted that patients are seeking information about proper drug disposal. Twenty percent of the pharmacies responding indicated that they had a program in place to educate consumers about proper drug disposal. It is likely that these results are typical and reflect the needs across the State. Consumers were also surveyed at the local libraries after viewing the display board and bookmark. **Implications:** Expected results include identifying consumer medication disposal procedures, usefulness of displays and bookmarks and enhancing patient safety.

**Quality Assessment of a Team-Taught, Learner-Centered Pharmacotherapy Course.** Brian Buck, The University of Georgia, Robin L. Southwood, The University of Georgia. **Objectives:** Active learning teaching methods improve development of critical thinking skills in Pharmacotherapy. Previous evaluations of our two-semester team-taught Pharmacotherapy course demonstrated reliance on “lecturing” as a teaching strategy and course management inconsistencies. These findings resulted in implementation of quality improvement measures including the establishment a primary course coordinator, in-class student work groups, and required use of learner-centered teaching. The primary objective was to assess faculty adherence to these new teaching and learning methods and to gauge faculty and student opinions. **Method:** This UGA IRB-approved study utilized prospective peer-review to measure percentage of teaching time in which active learning was utilized out of the total number of hours used to deliver the course. Exam questions were evaluated individually to determine the percentage of “one-best answer-type” questions. Additional subjective assessments included: 1) Faculty
self-assessment of adherence to teaching requirements and time needed to develop learner-centered activities; and, opinions on overall instructional format and ability to achieve intended learning objectives. 2) Coordinator assessment of faculty teaching materials using pre-determined, written criteria. 3) Student assessment of effectiveness of instructional format as it relates to course’s ability to train critical thinking skills, build confidence, and achieve stated learning objectives. Student opinions were measured using a standardized tool. All survey data will be compared to previous evaluations.

**Results:** Data Collection will be completed May 2010. **Implications:** Impact of course coordinator lead quality assessment upon content delivery, assessment and student learning and faculty performance in a team taught course in an established curriculum.

**Quantitative and Qualitative Analysis of Academic Dishonesty in Professional Division Pharmacy Students.** Megan A. Kaun, The University of Toledo, Michelle Serres, The University of Toledo.

**Objectives:** This study is designed to investigate the prevalence of academic dishonesty throughout accredited pharmacy schools in the United States. Additional objectives are to determine the area(s) of the curriculum in which academic dishonesty occurs most, frequency of the various types of academic dishonesty, if prevalence varies between traditional and non-traditional students, whether GPA requirements of the college of pharmacy correlate with the amount of academic dishonesty, if the rate of certain events are affected by whether or not students perceive them as academic dishonesty, and if certain universities or geographic areas differ in incidence of academic dishonesty. **Method:** Data is being collected using a cross-sectional survey instrument created with SurveyMonkey. Potential participants for the study include any current professional division doctor of pharmacy student attending one of the ninety colleges of pharmacy fully accredited by Accreditation Council for Pharmacy Education (ACPE). Authors estimate approximately 1,000 surveys, of about 9,000 possible, will be completed for analysis. **Results:** Study design and survey have received IRB approval. Preliminary validation review and survey modification have been completed. The pilot survey has been administered, and this data is currently being collected. Full study survey distribution is planned for March 2010. **Implications:** The results of this study should stand to increase awareness of the prevalence of academic dishonesty in pharmacy schools among faculty and administration. Results will also provide evidence of the most common types of academic dishonesty and students’ reasoning for participating in it to assist educational professionals in minimizing its prevalence.

**Student Perspectives on Evaluating Faculty in the Classroom.** Darla Zarley, University of Southern Nevada, Erik Jorvig, University of Southern Nevada.

**Objectives:** The objective of this study is to understand the factors influencing students’ perspectives when evaluating faculty’s didactic teaching performance in the classroom via a standardized course survey. **Method:** An online survey instrument was developed to assess first year and second year pharmacy students’ perceptions when evaluating faculty’s didactic teaching performance in the classroom. The survey allows students to identify classroom related and unrelated factors influencing their evaluation of faculty performance. The surveys were distributed to P1 students and P2 students on both the Nevada campus and the Utah campus of a three-year block-curriculum College of Pharmacy. **Results:** Results include specific student-identified factors which contributed to their overall evaluation of a faculty member’s didactic teaching ability in the classroom. Completed surveys will be analyzed and descriptive and inferential statistics will be presented. **Implications:** Analysis of survey results will allow for a greater understanding of factors influencing student evaluations of faculty didactic teaching performance. Conclusions drawn from the survey data will include strategies for improving faculty ability to use course survey results to improve didactic teaching performance. Comparisons of student responses from P1 students and P2 students as well as comparisons of the two geographically dispersed campuses will be analyzed to provide insight into geographic and/or class specific trends in student perception and evaluation styles.

**Student Pharmacist Impact on Patient Care Outcomes.** Victoria L. Losinski, University of Minnesota, Christina L. Cipolle, University of Minnesota, Community University Health Care Center.

**Objectives:** To describe the clinical impact made by student pharmacists in the provision of pharmaceutical care in an interdisciplinary student managed clinic in Minneapolis, Minnesota. **Method:** An analysis of the practice data generated from the pharmaceutical care service at the Phillips Neighborhood Clinic, are presented. Electronic documentation of the patient care process provides results on drug therapy problems identified and resolved, causes of drug therapy problems and clinical outcomes of patients cared for from March 2005 to March 2010. The results from this analysis are presented. **Results:** In the five years since the Phillips Neighborhood Clinic Pharmaceutical Care Service was established, student pharmacists have contributed as a core component of the patient-centered health care teams used to deliver care to patients. Student pharmacists have provided pharmaceutical care to over 1,000 patients during more than 3,000 pharmaceutical care encounters. These encounters resulted in the identification and resolution of more than 1,400 drug therapy problems. The most frequent drug therapy problem category identified is the initiation of new drug therapy. Further analysis of the characteristics of the patient population, medical conditions, medications, and drug therapy problems are presented. **Implications:** Student-managed clinics provide a unique opportunity for student-centered, practice-based, experiential education. In addition, the student pharmacists, at all levels of matriculation, providing pharmaceutical care at the Phillips Neighborhood Clinic contributed quantifiable value to the clinic’s patient population.

**Students’ Perceptions of Preparedness to Critically Evaluate Literature Before and After Advanced Pharmacy Practice Experiences.** Kathryn M. Momary, Mercer University, Lisa L. Lundquist, Mercer University.

**Objectives:** Compare students’ perceptions of preparedness to critically evaluate literature before 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 will be asked to complete the same survey at the end of the fourth professional year. The survey uses 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 experiences during APPE will be collected (number of opportunities to critically evaluate literature, which APPE provided the opportunity, and how was your performance evaluated) Students’ perceptions of preparedness after the third and fourth professional years will be compared with descriptive statistics and paired t-test. Descriptive statistics will be used to report data regarding critical literature evaluation experiences during APPE. **Results:** One hundred sixteen students (80.5%) consented for participation. Overall, the mean ± SD perception of preparedness was 2.79 ± 0.48 after the third professional year. In May, completion of the perception of preparedness survey will be requested of these
same students now completing their fourth professional year. Responses from the fourth professional year perception survey will be collated; results and comparison with data from the third professional year will be presented. Data regarding literature evaluation experiences on APPE will also be collated and presented. Implications: Students’ perceptions of critical literature evaluation skills may be impacted by practical applications during APPE. Opportunities for preceptor development regarding critical literature evaluation may be identified.

Supplementing Lectures with Cases, Essays and Drug Information Applications to Promote Active and Life-long Learning. David Fuentes, Pacific University Oregon, Mark Della Paolera, Pacific University Oregon, Melanie Foeppl, Pacific University Oregon, Ty Vo, Pacific University Oregon, Marianne Krupicka, Pacific University Oregon, Pauline A. Cawley, Pacific University Oregon, Brad S. Fujisaki, Pacific University Oregon, Joseph Lassiter, Pacific University Oregon. Objectives: Pharmacy students are traditionally exposed to many lecture hours during pharmacotherapy modules. Lectures provide students with information and opportunities to learn from faculty. Adding active learning during class may provide students with a purpose to research concepts using drug information applications and allow students to independently review and respond to patient cases, while working with peers to research topic-specific queries. Method: Pharmacy students (n = 92) in a gastrointestinal pharmacotherapy course were given lectures in the topics of: general gastrointestinal pharmacology; ulcerative disorders; pancreatitis; irritable bowel syndrome; inflammatory bowel; hepatitis; and, systemic cirrhotic complications. Students in the block curriculum of 6 days (36 hours) were given 1-hour lectures followed by 2 hours of active learning for each topic. One faculty member facilitated the class and used the Blackboard website to communicate active learning assignments, provide cases, and collect student work. Results: Students individually identified: key concepts they learned from the cases; associations between lectures and cases; and, areas they would like to learn more about. Almost all students reported learning many drug and disease-related concepts from the cases. They found cases complemented lectures and helped them identify drug-related areas to further investigate on their own. Aggregate performance trends will be described. Implications: Pharmacy schools using block curricula can integrate active learning into their courses by reducing the time devoted to providing more detailed lectures on pharmacotherapeutic topics and increasing hours used for active learning and drug information applications. This approach may allow students to engage in greater individual discovery and promote life-long learning.

Survey of Current Global Affiliations of U.S. Colleges and Schools of Pharmacy - 2009. Rosalie Sagraves, University of Illinois at Chicago. Objectives: A survey of US colleges/schools of pharmacy was undertaken in 2009-2010 to illustrate relationships with educational institutions, hospitals, faculty members, etc. globally. The survey was completed in association with the AACP, as were 2001 and 2007 surveys on this topic to which data from this survey will be compared. Method: Survey data have been collected and are being analyzed using FormSite Web surveys. Results will be compared with applicable information from previous surveys. Results: Data will be analyzed to determine the number of colleges/schools that have global/international programs as well as the number and types (e.g., research, experiential rotations, clinical practice, observations, graduate education, postdoctoral training, business partnerships, and faculty, student and/or practitioner exchanges) of formal and/or informal affiliation agreements and with what institutions located in which countries. Colleges/schools were asked if they plan to change their number of global/international affiliations and were asked to describe benefits their college/school receives from having global/international affiliations. Some other survey questions included those addressing student global activities, faculty as global consultants, college/school and/or university participation with global/international organizations and if global/international is a strategic planning theme. Colleges/schools will be offered an opportunity to share how AACP should be involved in global pharmacy education.

Teaching Residents how to Teach: Opportunities for Pharmacy Residents to Learn about Academia. Kalen B. Porter, The University of Georgia, Amber Bradley, Medical College of Georgia/University of Georgia, Tad Gomez, MCG Health, Inc./The University of Georgia, Brian Buck, The University of Georgia. Objectives: The primary objective of this study was to determine the amount and types of rotations offered in academia at pharmacy residency programs affiliated with or offered through colleges of pharmacy. Method: A 13-item questionnaire was developed for programs that do offer a concentrated rotation in academia and an 11-item questionnaire was developed for programs that offered longitudinal opportunities in academia. The questionnaires were developed to assess the activities and topic discussions incorporated into the different learning experiences, the number of residents completing concentrated rotations, the perceived benefit of the experience to the residents, and barriers that exist for institutions that do not offer concentrated rotations. The questionnaire will be distributed electronically to pharmacy residency directors at University Health Consortium (UHC) academic medical centers and at colleges of pharmacy. The responses will be analyzed with descriptive statistics. Results: One hundred and fifty institutions have been identified to complete the questionnaire representing a broad geographic distribution. One hundred and seven academic medical centers and 43 colleges of pharmacy will be included in the analysis. Implications: The results of this study will help determine the extent of current exposure to academia within residency programs affiliated with colleges of pharmacy, determine if areas for improvement exist, and assist programs in generating ideas for developing concentrated rotation experiences in academia.

The Development and Implementation of a Class in Ethnopharmacology of Appalachia. Rebecca S. Linger, University of Charleston. Objectives: Pharmacy education in rural areas should take into account the alternative remedies and practices of the local population. In the accompanying poster, we describe the creation and delivery of a course in the ethnopharmacology of Appalachia, which addresses the pharmacological effects of endogenous plants of Southern Appalachia. Many of the herbal remedies used today in Appalachia were passed down through oral tradition from ancestors who settled this area in the late 18th and early 19th century. Many of these herbal uses have been written down in almanacs, family medicine books and herbal texts that can still be found today. Method: In this class, many of these remedies are investigated from the standpoints of medical efficacy, potential toxicities and drug interactions with prescribed medications. Classwork includes two oral presentations, which are peer-evaluated for delivery and content, class discussions on the usefulness of remedies, the attitudes of practitioners towards traditional
remedy use and the risks of relying on herbal preparations, as well as the potential toxicities with pharmaceutical products. Results: Currently this course has been taught four times. All student evaluations have been positive and follow-up surveys have analyzed the usefulness of the material in the students’ P4 experiential rotations. Implications: Students who are exposed to the benefits and potential toxicities of herbal products used by their patients will be much better prepared to consult their patients who use them.

The Heart Disease Group Project (HDGP): A Longitudinal, Team-Based, Self-Study Case Using Interprofessional Teams. Timothy R. Ulbrich, Northeastern Ohio Universities Colleges of Medicine and Pharmacy, John D. Sutton, Northeastern Ohio Universities Colleges of Medicine and Pharmacy, Heather A. McEwen, Northeastern Ohio Universities Colleges of Medicine and Pharmacy, Susan P. Bruce, Northeastern Ohio Universities Colleges of Medicine and Pharmacy, Mark A. Penn, Northeastern Ohio Universities Colleges of Medicine and Pharmacy. Objectives: Interprofessional education is important to provide students with a model of learning that reflects experiences encountered as practitioners. Developed by Dr. John Sutton, the Heart Disease Group Project (HDGP), previously completed by medical students only, was expanded to include pharmacy students, thereby creating an interprofessional opportunity. Method: During the fall block, second year medical and pharmacy students (groups of 8-10) began the HDGP, a longitudinal, team based, self-directed case that spans six months. The groups are assigned to Mr. Smith, a 66-year-old male entering the medical system for the first time with a myocardial infarction. Students are challenged through written and verbal assignments to address competency-based topics including patient care, medical knowledge, practice based learning, systems based learning, communication skills, and professionalism. Three check points allow community experts with knowledge pertinent to the case to field student questions. Results: Several challenges and successes were identified. Working with different schedules and timing in the curriculum are examples of challenges. Students working collaboratively to identify the complexities of patient care and participating in peer evaluations are examples of successes. Additional challenges and successes will be available following the completion of the HDGP this year. Lastly, future plans including finding ways to encourage knowledge sharing across professions and including a debriefing process, will enhance the project and emphasize the importance of interprofessional learning. Implications: Interprofessional learning is important in developing the students’ ability to practice in an interdisciplinary workplace. This project provides students an opportunity to learn the value of interdisciplinary teamwork.

The Prevention Clinic: Implementation of a Relapse Prevention Clinic for Patients with Drug or Alcohol Addiction. Michael O’Neil, University of Charleston. Objectives: In 2008, data compiled by the Substance Abuse and Mental Health Services Administration indicate that more than 23.1 million people needed treatment for drug or alcohol addiction. Prescribing controlled substances to patients in recovery may increase their risk of relapse. Approximately 80% of patients with addiction have concurrent psychiatric disorders. Education about preferred drug therapies can reduce the risk for relapse. The clinic goals are: 1) Identify alternative 1st, 2nd and 3rd line drug therapies for the treatment of disease and/or procedures that healthcare professionals routinely prescribe or administer controlled substances. 2) Educate patients, families and their health care providers on optimal alternative therapeutic agents for disease processes and procedures. 3) Optimize patient compliance of medications necessary to treat dual diagnosis. 4) Provide an ambulatory care practice experiential site for students and residents. Method: Patients may self refer or be referred to the Prevention Clinic by their healthcare practitioner. It is estimated that 20-30 patients will be seen per week. A comprehensive medical, psychiatric, medication and drug and/or alcohol abuse history is reviewed. Recommendations will be reported, recorded and discussed with the patient’s practitioners. Patients will be monitored for outcomes through follow-up clinic visits and phone interviews. Results: Practitioner and patient acceptance of recommendations, effectiveness of recommendations and patient relapse is being evaluated. We report the Prevention Clinic’s activities and outcomes over a six month time period. Implications: Prevention of relapse to drug or alcohol addiction would have a major impact on financial costs to the healthcare system and patient quality of life and well-being.

The Use of Focus Groups to Develop the Advanced Patient Care Course. Jeannie K. Lee, The University of Arizona, Carey L. Geier, The University of Arizona, Anna A. Pleskun, The University of Arizona, Corey J. Bono, The University of Arizona. Objectives: This was a prospective, descriptive study using focus groups to identify clinical knowledge and skills sets to be integrated in designing the Advanced Patient Care course at The University of Arizona College of Pharmacy (UACOP). Method: Three focus groups were conducted: (1) UACOP PharmD candidates currently on clerkship rotations, (2) recent (within 2 years) graduates of UACOP practicing in diverse patient care settings including residency programs, and (3) UACOP preceptors who have worked with our students for at least 2 years. Verbal consents were obtained prior to starting the discussion, and all participants completed a demographic questionnaire. Introduction of the proposed Advanced Patient Care course was provided at the beginning to establish a framework for discussion. The focus group sessions were audiotaped, but the information shared by the participants remained confidential. The data were transcribed and coded into categories and subcategories discussed in these focus groups. Results: There were a total of 14 focus group participants. The majority of the pharmacist participants have residency training and practice in a clinical setting. Specific learning techniques was the most frequently discussed category among the groups with hands on training and clinical application being the most frequently discussed subcategory. Additionally, professionalism was most commonly mentioned by the preceptor group. Implications: The focus groups provided practical insights for designing the Advanced Patient Care course which will strive to achieve the Joint Commission of Pharmacy Practitioners’ 2015 Vision: “Pharmacists will be the health care professionals responsible for providing patient care that ensures optimal medication therapy outcomes.”

Use of Peer Evaluation to Enhance Student Confidence, Attitude, and Quality of SOAP Notes. Kristi M. Isaac, Xavier University of Louisiana, Vida A. Henderson, Xavier University of Louisiana, Joseph M. LaRochelle, Xavier University of Louisiana. Objectives: The purpose of this study is to evaluate early introduction and application of written communication in a four year Doctor of Pharmacy curriculum. By performing peer evaluations, student confidence, attitudes, and quality of SOAP notes may be enhanced. Method: All second year pharmacy students enrolled in a Pharmacy Skills Lab, and all third year students enrolled in a Pharmacy Practice Lab were introduced to SOAP notes through lecture and sample cases. Students were required to complete a minimum of 2 case based SOAP notes. Prior to the SOAP note introduction, students participating in the study completed a survey which assessed their attitudes, knowledge, and confidence levels regarding SOAP notes. At the end of the semester,
students completed a post survey regarding SOAP notes. **Results:** One hundred and sixty- three second year pharmacy students and one hundred and forty-nine third year students performed and peer evaluated a minimum of 2 case based SOAP notes. Eighty-one percent of students enrolled in the two courses completed the pre-survey instrument; twenty-nine percent of students enrolled completed the post survey. Survey and evaluation results will be presented. **Implications:** Written communication and documentation is a critical and essential step in the patient care process. The ability to write accurate and concise SOAP notes should be enhanced by students’ ability to assess their peers. Through writing and evaluating multiple SOAP notes in performance based classroom settings, attitudes and confidence levels of writing SOAP notes may be improved.

**Use of the Television Series, House, M.D., to Promote Critical Thinking Skills in Pharmacotherapeutics.** Jacob Frick, *University of Southern Nevada.* **Objectives:** The purpose of this study was to identify student perceptions regarding the use of a television show to promote critical thinking skills. A secondary objective was to predict success or failure of a potential elective course utilizing a similar learning strategy. **Method:** Over two years, two classes of second year pharmacy students attended a lecture on anemia as part of the hematology and oncology block in their therapeutic didactic coursework. Immediately following the standard lecture, the students were shown a fifteen minute edited episode of the television series, *House,* M.D. and were given a case study of ten questions. After review of the case, the students were asked to complete a survey regarding their opinions about learning with the interactive case. Likert items were used to assess agreeability. **Results:** Descriptive statistics will be calculated and presented in addition to free answer data. In addition, detailed methods will be presented to demonstrate implementation of this learning strategy. **Implications:** Previously published literature has identified the need for new teaching styles to fit new generations of students. This study may identify a popular and potentially effective method of teaching current students.

**Using Interactive Whiteboards in the Pharmaceutical Care Learning Center to Impact Student Learning.** Nichole M. Kulinowski, *University of Minnesota,* Jeannie M. Conway, *University of Minnesota,* Holly Epperly, *University of Minnesota,* Richard W. Brown, *University of Minnesota,* Kristin K. Janke, *University of Minnesota.* **Objectives:** 1) To determine the feasibility of implementing interactive whiteboards and ActivInspire teaching software in enhancing current active learning activities. 2) To investigate usefulness in improving consistency in teaching across multiple teaching sections. 3) Identify potential strategies for using these technologies to directly impact student outcomes. **Method:** The interactive whiteboards are currently being phased into each clinical discussion and will be used to augment compounding activities with video demonstrations, and interactive discussions in the second year professional students. At the end of the semester, focus groups and surveys of both instructors and students will assess the consistency of content delivery, the ease of use, the impact on learning environment and student’s ability to learn. **Results:** Results will be available in July. The survey data will identify any barriers to effectively using this technology for the future as well as demonstrate overall ease of use in classroom activities. The data will show potential impact on consistency of discussions and active learning activities as well as indicate student satisfaction and potential increase in engagement in classroom activities. Lastly, data from focus groups provide a foundation for aligning whiteboard facilitated active learning strategies more precisely with specific course objectives. **Implications:** Interactive whiteboard technology has shown to enhance pedagogy and improve student outcomes in primary and secondary education. However, in professional education, the impact of this technology has not been widely explored and deserves further consideration. The results from this pilot study will serve as the foundation for further research identifying the impact of this technology on student performance outcomes.

**Utilizing the WPQC Comprehensive Medication Review and Assessment Model to teach Medication Therapy Management.** Casey Gallimore, *University of Wisconsin-Madison,* Joshua M. Thorpe, *University of Wisconsin-Madison,* Kari Trapskin, *Pharmacy Society of Wisconsin,* Melissa Natzke, *University of Wisconsin School of Medicine,* Libby Kuh, *University of Wisconsin Hospital and Clinics.* **Objectives:** To measure the impact of a simulated comprehensive medication review and assessment (CMR/A) on pharmacy students’ confidence and intention to provide MTMS. The Wisconsin Pharmacy Quality Collaborative (WPQC) aligns incentives for pharmacists to provide MTMS. The CMR/A is the highest level of MTMS provided through WPQC. **Method:** Third-year pharmacy students conducted a simulated CMR/A, by role playing the part of the patient and pharmacist. Required CMR/A components include a patient interview, identification of drug-related problems, communication of recommendations, patient education, and electronic documentation and billing. Students complete a pre- and post-survey assessment tool developed to evaluate domains comprising the Theory of Planned Behavior, and validated via exploratory factor analysis (i.e., principal factors analysis). **Results:** At baseline ~33% of students were not confident in ability to identify CMR/A eligible patients, and to electronically document and bill. Approximately 25% did not agree they had necessary knowledge and skills to provide MTMS, and 67% felt pharmacists would not be adequately reimbursed for MTMS. Despite this, 72% intend to provide MTMS. Further analysis will be conducted following final survey completion. **Implications:** Pharmacy students have an interest in providing MTMS, but are lacking confidence in necessary knowledge and skills. The financial benefit of MTMS is not evident to the majority of students. Participating in a CMR/A has potential to improve student confidence, knowledge, and skills in providing and billing for MTMS.

**SOCIAL AND ADMINISTRATIVE SCIENCES**

**Completed Research**

**“Service Learning Project Identifies Decreased Emergency Room (ER) Visits for the Uninsured.”** Jozef Beckley, *Wilkes University,* Marie Roke-Thomas, *Wilkes University,* Mary F. McManus, *Wilkes University.* **Objectives:** A service learning elective was developed to integrate educational skills and public service which engaged students in public health projects, promoting learning through active participation. The objective is to determine the cost savings by the uninsured utilizing a VIM clinic instead of a hospital ER. **Method:** This study is a retrospective review of a 28-item anonymous questionnaire taken by patients (n = 196) discharged from the Volunteers in Medicine (VIM) clinic from August 21 thru December 4, 2009. The “Exit Survey” asked patients various direct and Likert-based questions regarding patient satisfaction and use of ER services. **Results:** A paired samples t test compared the mean total of ER visits prior to the individuals becoming a patient at the VIM (m = .99, sd = 1.764) to the mean total of ER visits after the individual became a patient at the clinic (m = .38, sd = .977). A significant decrease (195 vs 74 visits, p < .05) was found. A health care cost savings of
Adherence to Oral Hypoglycemic Agents among Patients with Diabetes: A Retrospective Cohort Study. 

**Method:** This is a retrospective cohort study of diabetic patients < 65 years, who were continuously enrolled in a state Medicaid program from January 2002 to December 2004. The date of the first pharmacy claim for OHA during the first six months of 2002 was the index date. Adherence to OHA was assessed within one year following the index date. Adherence was assessed using the proportion of days covered (PDC) and adherence was defined as PDC ≥ 0.8. Outcomes measured were diabetes-specific hospitalization and all-cause mortality during follow-up (end of adherence measurement to December 31, 2004). Multivariate regressions were performed to assess the independent association between adherence and outcomes.

**Results:** A total of 14,249 patients (age 49.4 ± 14.0 years; 76.1% female; 29.8% white, 60.3% black) were included. At 12 months after the index prescription, 35.5% of patients were adherent to OHA. After adjustment for covariates (age, gender, race, prior hospitalization, and Charlson comorbidity index), adherent patients were 54.8% (OR: 0.452; 95% CI: 0.390-0.523) less likely to have diabetes-specific hospitalizations compared to nonadherent patients. The odds for all-cause mortality were not statistically significant between adherent and nonadherent patients (OR: 0.865; 95% CI: 0.521-1.438).

**Implications:** Adherence to OHA was suboptimal among diabetic patients enrolled in a Medicaid program. Adherence to OHA was associated with significantly less risk for diabetes-specific hospitalization. Interventions are needed to improve adherence to OHA so that patients can realize the full benefit of prescribed medications.

An Economic Analysis of Pursuing a PhD Degree after Completion of a PharmD Degree. Nicholas E. Hagemeier, Purdue University. 

**Objectives:** The purpose of this study was to examine the net present value and internal rate of return associated with pursuing the PhD degree upon completion of the PharmD degree as compared to the entry-level retail pharmacy practitioner. 

**Method:** Age-income profiles were constructed based on 2008 national annual salary data. A priori assumptions were developed and sensitivity analyses were conducted. Net present value and internal rate of return were calculated across pharmacy school/college departments for common career paths (e.g., academia, industry, contract research organizations) resulting from the PhD degree as compared to the practicing retail pharmacist. 

**Results:** Results indicated that the net present values for all careers associated with the PhD degree were negative as compared to the practicing retail pharmacist. Internal rate of return of pursuing the PhD degree was low, ranging from 0.3% to 3% for commonly pursued PhD careers. Sensitivity analyses supported the findings of the study. 

**Implications:** Economic financial incentives for PharmD graduates to pursue graduate education are lacking. Currently only 8% of enrollees in pharmacy school PhD programs have earned an entry-level US pharmacy degree. This study illustrates the need to consider economic aspects of graduate education when developing recruitment methods for PharmD graduates to pharmacy graduate programs.


**Objectives:** 1) To identify pharmacy students initial opinions about using pharmacogenomic tests for overall attitude, personal benefit, participating in pharmacogenomic research studies. 2) To determine if curricular exposure to an ethical pharmacogenomic dilemma impacted attitudes. 

**Method:** A validated questionnaire developed by Mark Rothstein on attitudes towards pharmacogenomics testing was used. The questionnaire was administered to P1 students during their first semester before and after curricular exposure to a pharmacogenomic ethical dilemma. His 25-question instrument focused on three areas: overall attitude towards pharmacogenomics, likelihood of obtaining a pharmacogenomic test, and likelihood of participating in pharmacogenomic research depending on data access (employers, insurance company, government, industry, universities, and charitable organization) and
Assessing Student Knowledge and Interest in the Implementation of Pharmacogenomics. Natalya Vaksman, Touro University; Mitchell Barnett, Touro University, Maggie Louie, Touro University. 

Objectives: Pharmacogenomics is an emerging area of study that will greatly impact the practice of pharmacy as well as the direction of patient care. According to the third edition of the competency guidelines set forth by the National Coalition for Health Professional Education in Genetics, improved aptitude in genetics is imperative for proper disease management and diagnosis. The Objective of this Study is to evaluate the education and interest of pharmacy students in pursuing a career in pharmacogenomics. Method: First and third year students from eight pharmacy schools in California were invited to participate in a survey developed by the Touro University CAPSLEAD team. Students completed either a hard copy or electronic version of the survey indicating their attitudes towards pursuing a career in pharmacogenomics as well as feelings of preparedness for such a career path. Results: A total of 714 students attempted the survey, of which 644 were fully completed and included in the final cohort. Statistical analyses showed that if pharmacogenomics was incorporated into the pharmacy curriculum, students were more likely to view pharmacogenomics as important to the future practice of pharmacy. First-year students were also more open to the inclusion of pharmacogenomics in their preference of practice than third-year students. Implications: While students agree that pharmacogenomics is important to the future practice of pharmacy, it appears that there is limited interest in the subject. Further investigation is necessary to evaluate the desire of pharmacy students to incorporate pharmacogenomics into their future practice.

Assessing the Expectations and Outcomes of an International Experience for Pharmacy Students. Abigail Frank, University of Minnesota, Doneka R. Scott, University of Minnesota. Objectives: To assess the expectations, perceived value, and possible barriers for student participation in international pharmacy experiences by using the structure of the current international pharmacy experience offered at the University of Minnesota as a specific example and basis for improvement and expansion of this type of academic opportunity. Method: Fourth-year pharmacy students selected to participate in an international advanced pharmacy practice experience (APPE) and incoming third-year pharmacy students enrolled in an international elective course participated in focus groups prior to their departure to Velbert, Germany. A 10-item questionnaire was developed and administered to all the students on their return to assess the outcomes of their experience. Results: Both fourth-year and incoming third-year students identified potential barriers to participation in international experiences as the cost of participation, the language barrier, the difficulty of reentry into the American culture, and the access to activities of daily living. Students valued the opportunity to study abroad, the exposure to pharmacy practice in an international health care system, and the additional insight gained from interacting with non-English speakers in a foreign country. There was a significant difference between the APPE students’ and elective students’ desire to participate in this experience again. Implications: As we expand opportunities for students to gain a global perspective on health care, facilitating international experiences can be valuable for students. When designing international experiences, it is important to consider barriers for participation, student expectations, student motivation for participation, and the structure of the experience.

Assessing the Reliability of an Admission Interview Process in a College of Pharmacy. Olayinka Shiyanbola, South Dakota State University, Joel E. Houglum, South Dakota State University, Jane R. Mort, South Dakota State University. Objectives: To evaluate the reliability of raters during an interview process for admission to a Pharm.D. program. Method: Students who interviewed for admission into the Pharm D program were evaluated by 2 individuals. This included at least one faculty and either a non-faculty or a second faculty. A recommendation for admission was made using a 4 item rating scale. Students’ interview data from 2008 and 2009 were pooled to investigate the differences between the interviewers’ scoring. Pearson correlation compared the recommendations for each interviewer with his/her co-interviewer for the same student. Cohen’s kappa measured the level of agreement for all the interviews with faculty/ non-faculty and faculty pairs. Results: In 2008 and 2009, 235 students were interviewed by 13 faculty and 9 non-faculty interviewers. Interviewers’ scores differed by >1 point on the rating scale for only 2 students. Among all interviewers, the average correlation coefficient was 0.7489 (range 0.6173-0.9449). The level of agreement between faculty and non-faculty (n=73) was fair (kappa 0.32) while it was moderate between two faculty (n=162, kappa 0.42). Implications: Though there was a high correlation between interviewer recommendations, there was a higher level of agreement between faculty pairs than faculty/non-faculty pairs. It is important to review the current training program for interviewers with special emphasis on non-faculty interviewers and possibly a change in the rating scale used. This may improve the effectiveness of the admissions selection process.

Assessment of an Integrated Drug Literature Evaluation Course. John P. Bentley, The University of Mississippi, Kim G. Adcock, The University of Mississippi, Kyle D. Null, University of Mississippi. Objectives: To evaluate students’ performance in a first-professional year course designed to introduce students to drug information resources and cover principles of biostatistics, epidemiology, and research design. The course was developed by two academic departments and used elements of team-based learning, independent learning, as well as more traditional instructional designs. About 50% of the course comprised basic and clinical biostatistics. Method: In addition to course-embedded assessments, students were asked to complete a 20-question research design and biostatistics knowledge test (originally developed for medical residents) at the beginning (pretest) and end (posttest) of the course. Several attitude/confidence questions also were included. Results: Class enrollment was 100; 98 completed both the pretest and posttest. The overall mean knowledge score was 30.6% at pretest and 50.2% at posttest (p < 0.0001). Both scores were significantly different than knowledge scores of medical residents (41.1%) and fellows/general medicine faculty with training in biostatistics (71.5%) previously reported in the literature. Commonly missed questions dealt with more advanced topics (e.g.,
**Bachelors of Sciences in Pharmaceutical Sciences: A Review.** Fadi M. Alkhateeb, University of Charleston, Jill Ashworth, University of Charleston, Crosby Amoah, University of Charleston, Kassie Castranova, University of Charleston, Katherine Linebaugh, University of Charleston, Olutosin Oyelowo, University of Charleston, Jennifer Thacker, University of Charleston. Objectives: The Bachelor of Science in Pharmaceutical Sciences (BSPS) degree, as well as their respective programs, have yet to receive the same level of attention from the literature as the BS in Marketing and Management. Although there are a limited number of schools in the United States that offer a Bachelor of Science in Pharmaceutical Sciences, each school has its own variations in the curriculum in which they offer. The BSPS offers students a doorway to the pharmaceutical, health care, and graduate school. BSPS students learn about key topics including medicinal chemistry, pharmacology, and pharmacokinetcs. Implications: This study provides timely review about the coursework, program lengths, and job opportunities for graduates in these degrees. Results: Based on a review of current resources, there is a limited amount of literature available on the BSPS and BS in Marketing and Management. Although there are a limited number of schools in the United States that offer a Bachelor of Science in Pharmaceutical Sciences, each school has its own variations in the curriculum in which they offer. The BSPS offers students a doorway to the pharmaceutical, health care, and graduate schools. BSPS students learn about key topics including medicinal chemistry, pharmacology, and pharmacokinetics. Implications: This study provides timely review about the coursework, program lengths, and job opportunities for graduates in the BSPS and BS in Pharmaceutical Marketing and Management. Currently, the BSPS programs have yet to receive a large amount of attention, but the importance in pharmaceutical education cannot be denied.

**Bridging the Gap: A Unique Lecture Series to Educate Future Practitioners on Minnesota Communities.** Jacob Langness, University of Minnesota, Doneka R. Scott, University of Minnesota. Objectives: To assess the effectiveness of a student-driven lecture series. The goals of this series were to provide an interprofessional forum to educate future practitioners on health disparities within communities in Minnesota in a safe and non-judgmental environment and to expand the definition of culture and underrepresented groups. Method: Three hour-long lectures consisting of a brief overview of a cultural group and specific health disparities common to the group, a case scenario emphasizing cultural norms, and a question and answer segment were delivered on the Somali culture, transgender individuals, and the deaf community to students by respective intra-culture community leaders. To assess the acquisition of the educational content of the lectures, pre- and post-tests were administered to the audience participants. Three focus groups were conducted post-series to ascertain the effectiveness of the lecture series and to gain feedback for improvement. Results: One-hundred and six, 114, and 71 students attended the lectures, respectively, representing the health professions of pharmacy, dentistry, medicine, nursing, public health, and allied health, undergraduate students, community members, faculty and staff. With an overall response rate of 80.8%, there was a significant improvement of scores from pre-test to post-test for all three lectures (p<.001). Focus group results indicated that cultural definitions were broadened by these lectures. Students felt comfortable learning and asking questions in this environment. Implications: The objectives of the lecture series were met. A student-driven program can be an effective modality to educate students vis-a-vis health disparity and cultural competence education in the extracurriculum.

**Consumers’ Information Sources and Ability to Provide Generic OTC Examples: Accurate or Not.** Elizabeth Szemore, Nova Southeastern University, Nisaratana Sangasubana, Nova Southeastern University, Lily Wong, Nova Southeastern University, Silvia Rabionet, Nova Southeastern University, Nancy Hart, Nova Southeastern University. Objectives: (1) Describe the extent to which consumers can provide correct examples of generic or private labeled Over-the-Counter (OTC) drugs; (2) describe sources from which they learn of generic OTCs; (3) determine factors associated with consumers providing correct examples of generic OTCs. Method: Utilizing a cross-sectional, descriptive survey design, a convenience sample of 200 adult participants were recruited from a university-affiliated pharmacy excluding employees and students. Participants were asked to define and give examples of generic OTCs, the source from which they learned of generic OTCs and the frequency of using a pharmacist for OTC advice. Sociodemographic information was also collected. Logistic regression was used to determine predictors of participants providing correct examples of generic OTCs. Results: Participants’ average age was 48 years (S.D. =18) with almost 70 percent being female. Sixty-two percent gave correct examples of generic OTCs. Sources used were: store display (37%); media (12%); family/friend (11%); self-research (8%); doctor (8%); pharmacist (6%). Only 25 percent often or always used a pharmacist for OTC advice while over 40 percent rarely or never used a pharmacist. Those with college degrees, using self-research, store display, doctor, media and pharmacist were more likely to provide correct examples of generic OTCs. Implications: Consumers do not often use pharmacist as OTC advisors. However, those who do use pharmacists are more likely to provide correct examples of generic OTCs. As the generic OTC market grows due to increased availability and rising costs, pharmacists can be vital in ensuring accurate knowledge to help consumers make informed decisions about generic OTCs.

**Cross Curriculum Collaboration: Using One Assignment to Meet Education Objectives in More Than One Course.** Kimberly B. Ayes, Lipscomb University, Kamala S. Nola, Lipscomb University. Objectives: To determine if faculty collaboration on a common assignment would allow a single assignment to be completed that would meet objectives from multiple courses. An additional goal was to increase student pharmacist awareness of the relationship of courses across the curriculum. Method: The course coordinators for the Health Informatics and Communications courses met to identify an assignment that would be used in both courses. A review of curriculum mapping was done and syllabi were compared to identify a common educational objective. A common objective for each course was creation of health related information for the public. The differentiating objectives for each course were the use of technology, specifically podcasting, for Health Informatics and health literacy and readability for Communications. Results: In Health Informatics, student pharmacists were assigned to determine a target underserved population and a health-related topic in this population.

They were to write a script addressing this topic and record a podcast. The completed podcast was uploaded to the course site in iTunes U. In Communications, the student pharmacist took this script and evaluated it using five different measures for readability. Students then adjusted the level of information either up or down one grade level based on the results. Implications: Single assignments can be utilized to meet educational objectives of more than one course. This can be an effective way for students to see in real-time the integration of learning activities between courses. Future plans include greater collaboration among faculty across the curriculum.

Developing Cultural Competency through a Public Health Rotation. Thomas E. Buckley, University of Connecticut. Objectives: To assess the relationships between medication adherence, cultural beliefs about medication, and mental health disorders in an underserved Cambodian American population. Method: During a public health APPE rotation, pharmacy students assisted medical providers and community health workers in administering surveys that included the Morisky 8-item Medication Adherence Scale (MMS-8), a culturally-modified Beliefs About Medicines Questionnaire (BMQ), the Hopkins Symptom Checklist (HST-25), and the Harvard Trauma Questionnaire (HTQ) to Cambodian Americans as a component of their torture treatment program. Multivariate analysis was used to determine predictors of adherence as defined by the MMS-8, including scores of BMQ, HST-25 and HTQ that were significantly associated with MMS-8. Results: The mean MMS-8 score for the 33 patients surveyed was 3.53, and 57.6% reported a score indicating an overall poor level of adherence. Patients with negative beliefs about medications, and those considered symptomatic for depression, anxiety, and post-traumatic stress disorder were significantly associated with low medication adherence. The students enjoyed the process of learning about cultural factors affecting medication adherence and expressed the knowledge they learned will help them in becoming culturally competent. Implications: Students learned how cultural experiences and beliefs influence medication adherence. Recognizing cultural experiences’ impact on mental health disease and incorporating cultural beliefs in overall medication assessment will aid in the ability to identify and resolve issues in medication adherence, and build skills toward achieving cultural competency.

Development and Evaluation of a Simulation to Teach Curriculum Development in a Graduate Program. Gail D. Newton, Purdue University. Objectives: The purpose of this study was to develop and evaluate a course on curriculum development that would allow students to experience a variety of technical, logistical, and behavioral dilemmas that occur when a faculty develops and attempts to secure colleague approval for a new curriculum. The rationale for doing so was to increase the students’ confidence and effectiveness during curriculum development efforts after they accept academic positions in the future. Method: Each of the 15 graduate students enrolled in the course is studying toward an advance degree in one of three areas: clinical pharmacy, pharmacy education or social and administrative pharmacy. The student’s were divided into three groups of five such that students in each area of study were included in each group. Each group was assigned one of the three areas and charged as simulated faculty to develop the major components of a graduate curriculum. Further each group was responsible for getting their work approved by their classmates who comprised the remainder of the simulated department faculty. Class sessions were led by University personnel with extensive experience in curriculum planning. Results: At the end of the semester, each group successfully garnered approval of their curricula. In addition, all students indicated that they felt more confident in their ability to be effective in future curriculum revisions efforts. Implications: Students who desire academic positions may benefit from such an experience in graduate school.

Development and Validation of a Rubric to Assess Student Pharmacists’ Problem-solving Skills. Lourdes G. Planas, The University of Oklahoma, Xun Ge, The University of Oklahoma, Nelson Er, U.S. Postal Service. Objectives: To develop and validate a rubric to assess student pharmacists’ problem-solving skills. Inter-rater reliability and known groups validity of rubric scores were assessed in an experimental study of a problem-solving modeling system. Method: Five problem-solving steps adapted from Longest’s work on health professional decision-making were included in the rubric: (1) identify the problematic situation, (2) define the problem, (3) list and evaluate solution options, (4) choose, justify, and implement a plan of action to solve the problem, and (5) evaluate the plan. For each problem-solving step, descriptors were written for four performance levels (outstanding performance, meets expectations, needs improvement, unsatisfactory performance). Two pharmacy faculty scored 96 students’ initial and revised problem-solving responses to an asthma care. Students had been assigned to either a treatment group with problem-solving question prompts and peer review prior to revision, or a control group with no prompts and only self review before revision. The raters were blinded to the groups. The primary author discussed the scores with the raters, elicited issues from the scoring process, negotiated differences, and reached consensus when there were large disparities in scores. Results: Inter-rater reliability was strong (r = 0.94, p < 0.01). Multivariate analysis of variance revealed significant differences between the treatment and control group scores (p < 0.01). Implications: Two raters were concordant in their use of the problem-solving rubric. Rubric scores also distinguished between two student groups with different exposure to problem-solving modeling. Further testing of the rubric is needed with a wider variety of clinical cases.

Development of a Pharmacy Practice Laboratory Module Focused on Doing Research as Pharmacists. Brandon J. Patterson, The University of Iowa, Matthew Witry, William R. Doucette, The University of Iowa, Mary J. Stary, The University of Iowa, Jeffrey C. Reist, The University of Iowa, Michelle A. Fravel, The University of Iowa. Objectives: Practice-based research has emerged as an important way for pharmacists to contribute to evidence-based medicine. Few studies have explored curricular options in preparing pharmacists for roles in research once in practice. Previously proposed research-focused curriculum options included development and implementation of whole courses or longitudinal research requirements. These can be difficult for colleges to integrate into a crowded Pharm.D. curriculum. The purpose of this study was to create and evaluate a pharmacy practice laboratory course module designed to increase Pharm.D. students’ knowledge and efficacy relating to practice-based research. Method: A 1-hour lecture and 2-hour laboratory session was developed based upon textbooks and literature discussing research methods and practice-based research. An evaluation was performed using a one-group, pre-test/post-test, non-experimental design. Pre-test items measuring knowledge and efficacy were compared to identical post-test items. Additionally, the post-test measured satisfaction, intent, and allowed for students to provide open-ended feedback. Results: Student knowledge in research terminology, data collection methods, and formation of collaborative relationships for conducting research significantly increased (Average increase 1.47
on 15-point scale; p<0.001). Cronbach’s coefficient (0.86) showed good reliability for the self efficacy measure. Summed efficacy significantly increased (Average increase 78.34 on a 500-point scale; p<0.001). **Implications:** This study demonstrates that a module on practice-based research can improve Pharm.D. students’ knowledge and self efficacy for participating in such research. More research should be done to determine the long-term effectiveness of such training, as well as to improve these learning activities.

**E-Professionalism, Social Media, and Residents: Residency Program Directors’ Views.** Jeff J. Cain, University of Kentucky, Doneka R. Scott, University of Minnesota, Kelly M. Smith, University of Kentucky. **Objectives:** To determine pharmacy residency program directors’ attitudes and opinions regarding use of social media in residency recruitment and selection. **Method:** A 24-item questionnaire was developed, pilot-tested, revised, and administered to 996 residency program directors via SurveyMonkey.com. **Results:** The majority of respondents (72.5%, n=324) self-rated themselves as either non-users or novice users of social media. Twenty percent (n=91) indicated they had viewed a pharmacy resident/applicant’s social media information. More than half (51.7%, n=46) discovered e-professionalism issues including questionable photos and comments/posts revealing unprofessional attitudes. Only 4.4% (n=20) of respondents have reviewed applicant profiles for residency selection decisions. Of the profiles viewed, 52% (n=13) resulted in no effect on the decision, 28% (n=7) resulted in a negative effect for the applicant, and 20% (n=5) resulted in a positive effect for the applicant. Over half (n=219) of residency program directors are unsure whether they will use social media information for future residency selection decisions. Thirteen percent (n=55) indicated they will, and 34.3% (n=143) indicated they will not use social media information for future residency selection decisions. Intentions to use social media information increase, however, if this information is presented to them versus actively searching for it. **Implications:** Residency program directors as a group appear to support the notion that e-professionalism is important to the profession and that users should be accountable for information published in online public venues. Low numbers reported utilizing social media in resident selections; however, a much larger percentage anticipates using social media information in the future to aid in their decisions.

**Effects of Learning-Centered Assessment on Pharmacy Students’ Attitudes Towards and Knowledge of Statistics.** Spencer E. Harpe, Virginia Commonwealth University, Lisa B. Phipps, Virginia Commonwealth University. **Objectives:** To examine the effects of a learning-centered assessment approach on outcomes in a statistics course. **Method:** Statistics courses for second- (P2) and third-year (P3) pharmacy students were taught simultaneously in fall 2009. The P2 course used a learning-centered approach incorporating optional assignments and a grading scheme selected by the class while the P3 course used a traditional approach involving only formal examinations and a pre-determined grading scheme. Instruction was otherwise identical. Students completed the Survey of Attitudes Towards Statistics (SATS-36), the Current Statistics Self-Efficacy (CSSE) instrument, and a statistical knowledge assessment before and after the course. Mean [standard deviation] scores for the SATS-36 domains, the CSSE, and the statistical knowledge assessment were compared between classes using repeated measures ANOVA. **Results:** Of 121 P2s and 129 P3s enrolled, both pre- and post-course responses were collected from 100 P2s and 109 P3s. Statistics self-efficacy was not significantly different between classes. Significant changes for statistics attitudes were noted in the difficulty domain of the SATS-36. Students reported decreased difficulty over the semester (p = 0.03) with no differences between classes (pre-course = 3.7 [0.9], post-course = 3.8 [0.9]). Statistics knowledge increased significantly (p < 0.01) over the semester with greater increases for P2s (18.0 [25.0]) than P3s (7.3 [21.3]). **Implications:** Despite a significant difference in statistical knowledge score changes between classes, there were relatively small differences in attitudes towards statistics and statistics self-efficacy. Learning-centered approaches focusing only on assessment may not be sufficient to affect student attitudes in a statistics course.

**Effects of Receipt of Guideline-Recommended Care on Risks for Hospitalization and Mortality in Adults with Diabetes.** Yi Yang, The University of Mississippi, Benjamin F. Banahan, The University of Mississippi, Patrick F. Pace, The University of Mississippi. **Objectives:** To determine whether receipt of guideline-recommended patterns of care reduces the risks for diabetes-specific hospitalization and all-cause mortality in working-aged adults (18-64 years) with diabetes. **Method:** This is a retrospective, longitudinal cohort study of individuals continuously enrolled in a state Medicaid coverage from January 2002 to December 2004 and who had a diagnosis of diabetes in 2002. Receipt of four types of guideline-recommended care (annual dilated eye examination by specialists, HbA1c testing, blood lipid testing, and nephrology testing) was identified with procedure codes using medical claims of 2003. Outcomes measured were diabetes-specific hospitalization and all-cause mortality in 2004. Multivariate regressions were performed to assess the independent association between receipt of guideline-recommended care and outcomes. **Results:** 14,388 individuals (73% females; mean age 51.2 (±10.2) years; 29% whites, 60.0% blacks) were included. 37.5% received annual dilated eye examination, 38.8% received HbA1c testing, 26.2% received lipid testing, 6.2% received nephrology testing, and 35.7% of individuals received none of the guideline-recommended care. After controlling for baseline patient characteristics (age, gender, race, prior hospitalization, Charlson comorbidity index, use of insulin, oral hypoglycemic agents, and antihypertensives), we found that receiving one more type of guideline-recommended care was associated with a 40.4% (OR: 0.596; 95%CI: 0.446-0.797) reduction in all-cause mortality. The association between receiving one more category of care and diabetes-specific hospitalization was not statistically significant (OR: 1.042; 95%CI: 0.958-1.134). **Implications:** Receipt of guideline-recommended care has a beneficial effect on all-cause mortality in this patient population. Efforts are needed to improve patient receipt of recommended care.

**Health Professional Education Outcomes from a Health Sciences University-sponsored Community Music Program.** Kathryn T. Knecht, Loma Linda University, Jason Uyeyama, La Sierra University, Armin Hariri, Loma Linda University, Tam Trieu, Loma Linda University, Alexander Knecht, La Sierra University. **Objectives:** A music program was developed by Loma Linda University (LLU) and La Sierra University (LSU) to tutor low-income K-12 children in string instruments and piano. It was hoped that mentoring interactions would allow professional or pre-professional student mentors to learn more about the local community and develop skills in student learning outcomes not centered on academic content (e.g., collaboration, diversity). The program was also intended to introduce the community to health professional education at LLU. **Method:** Once a week, children were given group and small-group music instruction by mentors at a LLU-run clinic several miles from Loma Linda University. Throughout the year, children and their families were exposed to short presentations of health professions including pharmacy, and
Initial Experiences with a Two-day Intensive Interdisciplinary Team Building Course. Jean T. Carter, The University of Montana, Kerry Haney, The University of Montana, Mary McHugh, The University of Montana. Objectives: Objectives. The goals of the course were to teach team skills as well as bring students from the pharmacy technology and pharmacy programs together into a single course. Method: Methods. The elective course was designed as a two-day seminar and workshop. Course topics included personalities and team roles, leader and member characteristic in effective teams, and addressing team issues such as conflict. Students worked in teams to identify characteristics, test team building activities, create a dress code, and develop a list of expectations for employee behavior. Outside practitioners were brought in to participate in the teams. Results: Results. Six students (two pharmacy technology, two first-year pharmacy, and two second-year pharmacy) attended. Five of the six (83%) students responded. All agreed that the course met their expectations and rated the topics highly (means of 4.0 to 5.0 per topic on a 5-pt scale). For each team task, all students indicated they used communication skills and all but one student also used their organizational skills each time. Overall, students rated the format for the course very highly (mean (SD) = 2.8(0.15) on 3-pt scale); reactions to having no slide presentations were mixed. All students felt their team skills were improved (mean(SD) = 1.8 (0.447) on a 0-2 scale and all planned to apply their knowledge at work. Students suggested allowing students from other professions to enroll and to create a pharmacy-specific task next year. Implications: Implications. Initial experiences were positive so the elective will be offered again next year. Inclusion of other disciplines will be considered.

Monographs as an integrative application of Evidence Based-Medicine and Pharmacoconomics in the PharmD Curriculum. Anandi V. Law, Western University of Health Sciences, Cynthia Jackevicis, Western University of Health Sciences, Mark Bountha-vong, Veterans Affairs, San Diego. Objectives: Evidence Based Medicine (EBM) is being progressively incorporated throughout the PharmD curriculum at our institution. Students receive overall instruction on and application of the EBM process [the 5As (Ask, Acquire, Appraise, Apply, Assess)] in different courses. In the Pharmacoconomics (Pecon) course we developed a monograph assignment that incorporated application of EBM and Pecon concepts. Student performance and course evaluations were used to assess value of the monograph project. Method: The assignment was introduced to 140 students in the Pecon course prior to the course so students had time to ask and acquire evidence for the monograph. Eight drugs approved within the past 5 years (to keep volume of data available on all drugs fairly equitable) were assigned to 16 teams; two teams had the same drug. One of the 2 teams was asked to present evidence FOR, while the other team had to present AGAINST adding the drug to formulary. Half the team presented while the other half was responsible for answering questions to ensure equity in team effort. Teams were graded on: written reports responding to 16 questions including 5As and budget impact models; 15 minute oral presentations and an online quiz given at the end of the presentations. Results: Assessment of student performance across 2 years suggests that students were able to apply the concepts of EBM and Pecon in their monographs. Students rated the assignment as challenging but positive in learning. Implications: Monographs are a successful method of incorporating and integrating learning across different concepts in the PharmD curriculum.

Oversight of Pharmacy Education: ACPE Accreditation Activities, 2000-2009. Jeanine K. Mount, University of Wisconsin-Madison, Suntaree Watcharadanrongkun, University of Wisconsin-Madison. Objectives: Chronic trends in activities of the Accreditation Council for Pharmacy Education (ACPE) regarding accreditation of colleges/schools of pharmacy (C/SOPs) in light of growth in the number of C/SOPs, implication of Standards 2007, and ACPE recognition by the US Department on Education. Method: ACPE Annual Reports and Reports of Proceedings were reviewed to identify accreditation actions related to professional programs in all C/SOPs in the US. Records from the years 2000-2009 were retrieved from the ACPE website and the American Journal of Pharmaceutical Education during October 2009. Review type (i.e., comprehensive review, focused review, interim report), board action, and C/SOPs status were included and analyzed. Of the 113 C/SOPs with accreditation status in January 2009, 63 were public universities and 42 were members of the Association of Academic Health Centers (AAHC). Results: During the study period, ACPE’s oversight activity grew substantially. The number of comprehensive reviews increased by approximately 50% (3-year rolling average = 17 in 2002 vs. 25 in 2009). The number of focused reviews increased by slightly more than 100% (3-year rolling average = 8 in 2002 vs. 17 in 2009). The number of interim reports increased by nearly 250% (3-year rolling average = 17 in 2002 vs. 47 in 2009); in 2009, interim reports were required by over 40% of all C/SOPs with accreditation status. Implications: Trends show the growing demands for accreditation-related accountability by C/SOPs and suggest similarly increased expectations for the accrediting body itself. These results, combined with the continually increasing number of C/SOPs, suggest heightened stress in the accreditation process.

Peer Observation: A Faculty Initiative. Tamra S. Davis, The University of Oklahoma. Objectives: Based upon (1) the mission of the University of Oklahoma College of Pharmacy (OU COP), (2) the request of Department of Pharmacy: Clinical & Administrative Sciences-Tulsa (PCAS-T) faculty, and (3) Accreditation Council for Pharmacy Education standards guidelines, a formal peer observation process was instituted in Fall 2008 to provide a teaching framework to supplement the required student evaluations. The objective for this study was to document the process and make initial inferences concerning its utility. Method: The study was descriptive in nature. The primary investigator created the survey based upon peer observation program goals and a literature review. Both close- and open-ended questions were incorporated. Four basic areas were investigated: value, incorporation of concepts, recommendations for improving the process, preparation for future observation. Surveys were deployed using the OUCOP survey tool and returned in anonymous format. Data were analyzed using qualitative principles. This study was a first step in a comprehensive evaluative study of the entire peer
observation program. **Results:** Participating faculty expressed opinions and perspectives mirroring the current literature. Faculty shared that the benefits are important to improve personal teaching effectiveness. The peer observation process appears to have provided value and utility. **Implications:** Peer observation and/or review can provide valuable documentation for faculty for professional growth and preparation for promotion and tenure. Dissemination of the findings from evaluative studies of the process can add to the fund of knowledge as other institutions develop similar processes to meet accreditation standards.

**Pharmacy Administration Education in Colleges of Pharmacy in Jordan.** Fadi M. Alkhateeb, University of Charleston, Omar Attarbeen, Jordan University of Science & Technology, David A. Latif, University of Charleston. **Objectives:** To determine the extent to which colleges and schools of pharmacy in Jordan offer pharmacy administration courses in their professional (Pharm.D) and undergraduate pharmacy (BS) curricula **Method:** A total of 8 colleges and schools of pharmacy in Jordan were surveyed via e-mail, phone calls and direct interviews. The following examples of Pharmacy Administration courses were used to describe typical courses in the discipline: Pharmacoeconomics, Public Health, Finance, Marketing, Management, and Social and Behavioral Pharmacy and Communications in Healthcare. **Results:** Eight colleges and schools of pharmacy provided usable responses. Six pharmacy schools (75%) offer required pharmacy administration courses. Most of the pharmacy schools that offer pharmacy administration courses teach approximately one to two courses in the discipline for the whole curriculum. However, due to the shortage of qualified pharmacy administration faculty in Jordan, most of the instructors do not have a terminal degree in pharmacy administration, rather they have a clinical or basic pharmaceutical sciences background. The public pharmacy school students had higher access to pharmacy administration education than private pharmacy schools students. Although many pharmacy schools in Jordan offer graduate degrees for almost all pharmacy disciplines, respondents indicated that graduate programs in pharmacy administration are lacking. **Implications:** When compared to their counterparts in the U.S., most colleges and schools of pharmacy in Jordan offer fewer courses related to pharmacy administration in their curriculum. One possibility could be due to the severe shortage in the number of faculty qualified to teach in this area.

**Predictors of Student Academic Performance in the First Professional Year.** Yingchen Wang, University of North Carolina at Chapel Hill, Kimberly H. Deloach, University of North Carolina at Chapel Hill. **Objectives:** Previous studies of the predictive value of student entry characteristics, primarily GPA and PCAT scores, on PharmD student academic performance have produced variable results. Research is limited using longitudinal data in conjunction with latent variables. This study analyzed student characteristics and first professional year GPA seeking to answer these questions: Which factors predict first-year student performance? What is the effect size of each predictor? **Method:** Data were analyzed from four consecutive PharmD cohorts, using first year GPA as the dependent variable. Independent variables included: entry GPA, PCAT scores, mean SAT math and verbal scores and admission difficulty Ratings for pre-pharmacy institutions, and gender. Initial descriptive analysis revealed a high correlation among SAT math and verbal scores, and admission difficulty ratings. To remove this multicollinearity effect, principal component analysis was performed and the component (called ‘latent’) extracted over 75% of the variances. Stepwise regression was performed on each dataset; variables were entered according to the magnitude of their correlations with the dependent variable. **Results:** No single best predictor of first year GPA was identified. Overall, PCAT score was a better predictor in terms of frequency and effect size, followed by entry GPA and the latent factor. The pattern of strength of predictors was not consistent across cohorts. **Implications:** Additional longitudinal study is needed to understand the strength and interplay between student entry characteristics as predictors of PharmD student academic performance. Data reinforce the necessity and desirability of thoughtfully considering multiple criteria for admission to the PharmD program.

**Preparation Strategies and Career Paths of Pharmacy Deans: A 20-Year Perspective.** JoLaine R. Draugalis, The University of Oklahoma, Cecilia M. Plaza, American Association of Colleges of Pharmacy. **Objectives:** For CEO pharmacy deans: 1) Describe the educational and professional backgrounds, 2) Provide descriptive data on career path and demographics, and 3) Identify trends and changes across four cohorts. **Method:** This study used a descriptive cross-sectional study design using survey research methodology. CEO Deans at every full and associate member institution of the AACP in the United States (N = 110) as of May 1, 2009 were included (7 institutions with acting or interim deans were excluded.) Deans that were not already in the database from previous data collections (1991, 1997, 2002) were identified. A 2-page instrument was sent to deans via first-class mail on May 6, 2009 followed by two reminders. Data were entered into SPSS 17.0 for analysis. **Results:** The database houses information on 90.3% (N = 93) of all current sitting CEO deans. The “typical pharmacy dean” was a white male, 57.3 +/- 7.4 years, who held a pharmacy degree. Deans spent about 18 years in the professoriate prior to being named dean. The average tenure in the current deanship was 6.7 +/- 6.3 years. The number of PharmDs as the highest terminal degree continues to increase relative to the number of PhDs in the pharmacy deanship. There are now more female deans than ever before (25%). The 2009 cohort was more apt to have a non-traditional career path to the deanship. Newly named deans highly recommended that aspiring administrators attend AACP programming. **Implications:** Increased numbers of institutions, retirements, and changes in preparation for the decanal role have ramifications for the pharmacy deanship.

**Prevalence of Alcohol Abuse and Consumption among Pharmacy Students at Six US Schools of Pharmacy.** Clayton D. English, Lauren S. Schlesselman, University of Connecticut, Jose A. Rey, Nova Southeastern University. **Objectives:** Due to the impact alcohol can have on work performance and the ability to safely practice pharmacy, knowledge of alcohol consumption and abuse among pharmacy students could help expand efforts to combat alcoholism prior to entering the professional workforce. The objectives of this study are to: 1) Determine the percentage of students who have problems related to alcohol consumption 2) Identify specific subgroups of pharmacy students that are at risk for developing alcohol-related problems **Method:** A 32-item questionnaire was offered to pharmacy students at six schools of pharmacy across the United States. The questionnaire consisted of demographic information and the Alcohol Use Disorders Identification Test (AUDIT). AUDIT scores were calculated for each student, with a score of 8 or higher indicative of alcohol related problems. Scores of 16-19 represent a high degree of alcohol problems and a score > 19 clearly indicates the need for intervention. **Results:** A total of 855 students participated in the study. Results from the AUDIT questionnaire revealed that 26.0% of students surveyed scored 8 or higher on the AUDIT, whereas 3.2% and 1.9% of students scored between 16-19 and > 19, respectively.
AUDIT scores were statistically different among groups in regards to gender, prior education, and marital status (p<.05). Grade point average (GPA) was not an indicator for higher alcohol use among students. Implications: These results indicate that one-fourth of pharmacy students surveyed have markers of dangerous and harmful alcohol use. Due to these findings, additional interventions (eg. educational programs, behavioral counseling, etc.) are recommended to help curtail consumption.

School of Pharmacy Seat Deposit Policies for Accepted Pharmacy Students. Joshua J. Spooner, Western New England College, Evan T. Robinson, Western New England College. Objectives: Many schools utilize seat deposits to identify accepted students planning to enroll into the professional phase of a pharmacy program. To date, no published research has examined this topic. Method: A market scan was conducted to identify school policies regarding the deposit amount, deposit due date, use of tiered deposits (multiple deposits over time), and refund availability on deposits for students beginning the professional phase in Fall 2010. Data were collected from a survey of school of pharmacy admissions personnel, PharmCAS school information pages, and school websites. Schools offering direct entry of high school students into the professional program were excluded. Results: Complete data was obtained for 87 schools. Seven schools (8.0%) did not require deposits. Eighty-seven schools required deposits (mean $561.93; s.d. $390.76; range: $40-$2,000). Seventy-three schools (91.3%) require deposits within a certain time frame (mean: 16.5 days of offer; s.d. 5.86; range: 7-30); calendar due dates were utilized by seven schools (range: March 15-June 1). Deposits were non-refundable at 69 schools (86.3%), partially refundable at seven schools (mean refund 56%; range: 10%-90%), and fully refundable at four schools. Five schools (6.3%) utilized tiered deposits (last payment date range: April 15-July 1). Implications: The required deposit amount and the timeframe for receiving deposits vary widely among schools of pharmacy. Deposits are usually non-refundable, and few schools use tiered deposits.

Stress, Spirituality, and Health-Related Quality of Life among Pharmacy Students. Jamie L. Fairclough, Palm Beach Atlantic University, Stevi Ruff, Palm Beach Atlantic University, Devon-Anne Sherwood, Palm Beach Atlantic University. Objectives: Objectives of this pilot study were to assess pharmacy students’ perceived levels of stress, spirituality, and health-related quality of life (HRQOL) and to examine patterns of relationships among these factors. Method: The Accreditation Council for Pharmacy Education (ACPE) established guidelines recommending the periodic assessment of pharmacy students’ stress levels. This study employed a cross-sectional, survey design to assess students’ perceived levels of stress, spirituality, and HRQOL during the second year of pharmacy school. Stress, spirituality, and HRQOL were assessed via the 10-item Perceived Stress Scale, the 10-item Spiritual Perspective Scale, and the Health-Related Quality of Life Scale. Results: Data were collected from 118 students from two campuses of a public pharmacy school. Stress and spirituality significantly impact pharmacy students’ perceived health and quality of life. Pharmacy educators should regularly assess students’ perceived levels of stress throughout the pharmacy program. Further understanding of the potential moderating effects of spirituality and other protective factors is warranted in this population.

Student Assessment of a Distance Education Learning Environment: A Qualitative Approach. Jane E. Wilson, The University of Oklahoma, Mark L. Britton, The University of Oklahoma, Tammy L. Lambert, The University of Oklahoma. Objectives: To determine students’ perceptions of the learning environment and learning experience in a two-campus, distance education environment. Method: First, second, and third year students were asked to participate in peer-led focus groups. Student facilitators and note takers were provided with training by faculty prior to leading focus groups. Focus group participants were asked to respond to the following questions: 1) how would you learn best in the college’s two campus, distance education environment?, 2) what are the greatest potentials for opportunity and the greatest sources of conflict in the learning environment?, 3) what are student responsibilities and accountabilities in supporting and maintaining classroom behaviors?, 4) what are student views on teacher responsibilities and accountabilities in supporting and maintaining classroom behaviors? Results: 90 students in 11 focus groups participated in discussions. Nine themes were identified in response to the four questions. Results were presented by a student to faculty at a faculty retreat. Following the presentation, a student panel comprised of first, second, third, and fourth year students answered questions from the faculty regarding study results. Implications: The data collected from focus groups affirmed that the overarching values of pharmacy students are consistent with those of pharmacy educators: attainment of knowledge, importance of becoming caring and knowledgeable practitioners, and leading the profession to the next level of practice. Results also supported findings of current literature regarding how this generation learns. The themes identified by the participants have the potential to enhance the current delivery of the curriculum.

Student Pharmacist Views on a College Sponsored Formal Mentoring Program. Matthew Witry, The University of Iowa, Brandon J. Patterson, The University of Iowa, William R. Doucette, The University of Iowa. Objectives: Student pharmacist mentoring programs have recently gained attention from colleges of pharmacy. However, little is known about student’s views on how these programs should be structured, what processes should be involved, and what the goals should be. The objective of this study is to assess student pharmacist’s views on formal mentoring. Method: Five, 60-minute focus groups were conducted in September, 2009. Participants were PharmD candidates in either their first, second, or third year. Discussion was facilitated using a question guide and a set of prompts informed by current mentoring literature. Focus groups were audio recorded and transcribed. Researchers used Kram’s formal mentoring framework (2007) as the basis for assigning themes to the transcripts. Researchers independently coded each transcript by assigning one or more theme to each sentence. Discrepancies were discussed and resolved through consensus. Results: In all, 28 students participated in the 5 focus groups. The most common themes related to mentoring processes, mentor characteristics, and program structure. Less common themes concerned protégé characteristics, protégé outcomes, mentor outcomes, organizational outcomes, and team outcomes. Implications: This is one of the first studies of formal mentoring in pharmacy.
The Relationship between Quantitative-based Admissions Criteria and Performance in a Drug Literature Evaluation Course.

Kyle D. Null, The University of Mississippi, John P. Bentley, The University of Mississippi, Kim G. Adcock, The University of Mississippi, David J. McCAffrey, The University of Mississippi. Objectives: To evaluate whether students’ scores on quantitative-based admissions criteria are related to performance in a drug literature evaluation course. Method: Students’ (n = 100) grades in required pre-pharmacy statistics and calculus courses as well as performance on the PCAT Quantitative Ability section were compared to performance in a first-professional year, integrated drug literature evaluation course, about 50% of which comprised basic and clinical biostatistics. Results: Although there was little variation in performance in the prerequisite statistics course (83% ‘As’), there appears to be a relationship between course performance and drug literature evaluation final course grades. No students who had a ‘B’ or lower in the prerequisite statistics earned an ‘A’ in the drug literature evaluation course, while 18.1% of the students with a prerequisite statistics course grade of an ‘A’ earned an ‘A’ in the drug literature evaluation course (Fisher exact test two-sided p = 0.068). The relationship appears to be due primarily to performance on course exams and not group-based assessments. Although there was more variability in calculus grades, no significant relationship was noted between class performance and grades in calculus. Students earning ‘As’ in the drug literature evaluation course tended to have higher Quantitative Ability scores on the PCAT (p = 0.004), which is primarily explained by a positive correlation of these scores with exam performance (r = 0.22, p = 0.029). Implications: This analysis suggests that it may be possible to use admissions criteria to identify individuals who might experience difficulty with a drug literature evaluation course.

The Utilization and Effectiveness of Guest Speakers in a Professional Development Seminar Series. Joseph A. Zorek, University of Illinois at Chicago, Norman L. Katz, University of Illinois at Chicago, Nicholas G. Popovich, University of Illinois at Chicago. Objectives: To evaluate the impact of guest speakers on multiple tiers of student development in a professional development seminar series. Method: This series invited approximately 20 guest speakers over the course of five semesters. After each speaker’s presentation, advisees submitted a written reflection of unspecified length within one week demonstrating what was learned. A survey instrument consisting of 24 Likert-type scale items with four open-ended questions was created and content validated to assess student development when exposed to guest speakers. The survey assessed this instructional method, the value of written reflections, and the broadening of the advisee’s outlook, as well as their personal and social growth. The survey was electronically forwarded to advisees from the graduating classes of 2008, 2009 and 2010. Results: Sixty-eight percent (46/68) of advisees participated in the survey. Results demonstrated the value of guest speakers, most notably in career development and professional responsibility. Greater than 80% of respondents formulated and focused on career goals, decided which Advanced Pharmacy Practice Experiences to select, and learned about career opportunities of which they were unaware. Additionally, guest speakers increased students’ awareness of their professional responsibility to use their knowledge and skills to benefit society. Implications: Although anecdotal evidence exists for and against the use of guest speakers in a variety of educational settings, no systematic evaluations of their impact on student development were located. As these results demonstrated, exposing pharmacy students to guest speakers from varied careers within the pharmacy profession was a valuable exercise.

Utilizing Innovative Technology to Create a Virtual Poster Session on Professionalism during National Pharmacy Week. Richard J. Kasmer, Northeastern Ohio Universities Colleges of Medicine and Pharmacy, David D. Allen, Northeastern Ohio Universities Colleges of Medicine and Pharmacy. Objectives: To encourage students to embrace innovative electronic technology in curricular activities and deliver a virtual poster session on professionalism issues during National Pharmacy Week. Method: The Northeastern Ohio Universities Colleges of Medicine & Pharmacy organizes an annual on-campus poster session during National Pharmacy Week. This event has always been completed via the traditional paper, poster board and easel approach. During the Fall 2009, we formed multiple four student teams with each selecting one of twenty five professionalism issues related to pharmacy practice. Teams were required to complete research, develop a final poster via power point and participate in a formal presentation. Electronic methods of delivering the poster included LCD projectors, tradeshow monitors and smart boards. All faculty, staff and students from both colleges were invited to the event. Student teams received a project grade and peer evaluation of team members was utilized to assess individual contribution. Results: Students completed a required project on the topic of professionalism by utilizing one of several electronic delivery platforms. Each tool created a poster of adequate size with high resolution and quality. A financial analysis showed that the traditional paper approach costs >$1200 annually and the virtual method cost $0.00. Implications: A new and innovative approach to delivering educational content was achieved through the use of readily available and accessible technology. Faculty from both colleges are now actively identifying additional educational and research opportunities for the use of this platform. Also, this approach supports the colleges “Go Green” initiative and desire to achieve an electronic environment.

What Factors Influence Student Course Evaluation Scores? Eunice P. Chung, Western University of Health Sciences, Juan Ramirez, Western University of Health Sciences, Wallace J. Murray, Western University of Health Sciences. Objectives: Student course evaluation scores are generally interpreted as effectiveness of teaching skills. The objective of this study is to evaluate whether other factors potentially influence the course evaluation scores as well. Method: The study was designed based on the hypothesis that factors other than effective teaching skills (e.g. difficulty level, interest and relevance of the topics, and performance in the course) may also influence the student evaluation of the courses. The summative student course evaluation scores for all didactic courses covered during the 3 academic years (2006 - 2009) were collected along with the mean student scores achieved at the end of the course and the number of A grades awarded in each course. A Pearson Correlation Test was used to determine association between student performance outcomes and the course evaluations scores. Results: Data for 83 didactic courses conducted during the 3 academic years were analyzed. The composite result shows that there is a significant correlation between the course evaluation score and the mean student performance in the course (r=.295, p=0.01) as well as with the number of A grades awarded in the course (r=.282, p=0.01). A sub-analysis by different levels in the program showed that the correlation was strongest for the
third year courses ($r=0.666, p=0.003$), which are also considered the more difficult courses based on student performances. **Implications:** The results suggest that student performance in the course may influence how they evaluate the course and therefore should be taken into consideration in interpreting the course evaluation scores.

**Theoretical Models**

**A Course Inventory and Curricular Mapping Tool.** Stanley S. Weber, *University of Washington.* **Objectives:** Curriculum maps can help schools identify and explore curricular deficiencies and plan changes. ACPE asks programs to undertake “‘mapping of the components and contents of the curriculum...” Despite the usefulness of mapping it often remains a paper-based irregularly-completed activity. We report the usefulness of a web-based tool for maintaining up-to-date curricular maps and an inventory of courses. **Method:** In preparation for a self-study, our faculty mapped core courses against school outcomes and against Accreditation Standards Appendix B. This information was collected on paper, entered into a spreadsheet, and converted into a document for subsequent review and analysis. However, this process proved too cumbersome to maintain as we continually modified our curriculum. We decided to automate data collection and processing by implementing a web-enabled database system. We also incorporated an inventory of items that define each course including who teaches it, how and when it is taught, how and when students are assessed, what skills are developed, what types of active learning techniques are implemented, what texts are used, etc. **Results:** In place for over a year, the tool provides a visual and dynamic interface to better understand current courses, plan new courses, and to help faculty recognize how courses interrelate. It has allowed us to identify and fix deficiencies in our curriculum and it is currently helping inform us during a major curriculum revision. **Implications:** Using this tool we can analyze real-time information about our curriculum and we are better informed about our curricular content and pedagogy.

**Communication Overhaul: A Right Brained Course For Teaching Left Brained Students.** James M. Nesbit, *Harding University.* **Objectives:** To create an enhanced learning experience for first year pharmacy students to practice patient counseling in a non-threatening environment. **Method:** A Communication/Counseling course primarily taught using didactic/lecture style classes received negative student feedback. The class coordinator chose to overhaul the class by implementing the following changes: A. Quizzes and lectures were reduced by 50%. B. A Communication Lab generally student-propelled was added. C. Role playing scenarios on a weekly basis. Scenarios were either student created, utilizing a minimum of three points from the textbook or faculty provided impromptu scenarios, D. Upon completion of the case scenario, student teams would critically analyze and provide constructive criticism to peers. Class would reconvene for a faculty led “debriefing” including salient points observed by the faculty member. **Results:** A. A typically introverted and shy student population demonstrated increased confidence about patient counseling. B. Students’ communication skills were honed through practice. C. Lab application tasks: a. Sharpened student’s knowledge about specific communication concepts and importance of these specific concepts in practice. b. Helped to actualize (make applicable) several slippery concepts. c. Created a “leveling” environment for students with little or no pharmacy experience to catch up with those students with more experience. d. Created a type of bonding for the entire class **Implications:** An Improved interpersonal skills to work effectively on interprofessional teams and provide better patient care which potentially would enhance patients’ therapeutic outcomes. B. Appreciation for communication in pharmacy.

**The Development of First-Year 4Cs Courses to Teach Self-Directed Lifelong Learning Skills in Pharmacy Students.** Conrad Dhing, *Husson University,* Leslie L. Devaud, *Husson College,* David B. Romerill, *Husson University,* Eric J. Jarvi, *Husson University.* **Objectives:** To describe the development and use of active learning strategies via recitation and laboratory classes to promote self-directed lifelong learning skills in pharmacy students. **Method:** The 4Cs courses (Cognitive, Communication, and Case-based Critical Thinking) were developed as a 6-semester sequence for the first three years of the professional pharmacy curriculum to teach self-directed lifelong learning skills in pharmacy students using active learning strategies. The expectations and applications of the courses increase as students progress through the program. The first year sequence of 4Cs includes two 2-hour recitations and a 3-hour laboratory class per week and utilizes case studies, problem solving tools and laboratory exercises to emphasize data collection, critical thinking and pharmacy practice skills. The case studies for the recitations are linked to content provided in didactic coursework, specifically the physical-chemical properties of drugs, physiology and pathophysiology. The laboratory exercises provide opportunities for students to develop practice skills appropriate for the first Introduction to Pharmacy Practice Experience (IPPE). To facilitate student interaction and participation, each recitation section has 10-12 students and each laboratory session has 32-33 students. **Results:** After the first semester of the 4Cs course with the inaugural class at Husson University School of Pharmacy, adjustments were made to improve the sequencing and assessment methods for the next academic year. **Implications:** Pharmacy students were presented with active learning strategies at the beginning of their professional program to develop self-directed learning that will continue throughout their academic and professional careers.

**Work in Progress**

**A Qualitative Analysis of the Impact of the Geriatric Medication Game© on Pharmacy Students’ Attitudes.** Aleeda M. Hess, *Purdue University,* Kimberly S. Plake, *Purdue University.* **Objectives:** Older adults may face challenges related to medication adherence and navigating the health care system. However, pharmacy students and pharmacists could find it difficult to empathize with these challenges prior to experiencing them. The objective of this study was to examine the impact of participating in the Geriatric Medication Game© on pharmacy students’ attitudes toward older adults. **Method:** Pharmacy students in their first professional year participated in the Geriatric Medication Game©, which is a simulation activity. In the game, students become an older adult patient with health conditions, such as limited eyesight, hearing, mobility, and fine motor skills. They navigate the healthcare system by participating in a simulated healthcare situation, which includes a physician office visit and filling a prescription. At the game’s conclusion, each student completed an open-ended questionnaire, answering five questions regarding their experience, as well as their attitudes towards older adults. Content analysis of the questionnaires was performed using QSR NVivo 8 to identify themes grounded in the students’ responses. **Results:** Students (N=459) completed the surveys in 2007, 2008, and 2009. Analyses are pending and will be completed by the time of the meeting. **Implications:** Older adults comprise a considerable proportion of patients pharmacists encounter, as they are the largest consumers of prescription medications. The Geriatric Medication Game© may be able to help pharmacy students better understand the challenges older adults face in navigating the healthcare system and improve their interactions with older adults.
Assessing the Use of Active Learning Techniques in an Accelerated Pharmacy Program: Challenges and Recommendations. Lilia Z. Macias-Moriarity, South University, Launa M. Lynch, South University, Martin M. Zdanowicz, South University. Objectives: Active learning encourages critical thinking and fosters development of self-directed learning. Studies indicate that pharmacy instructors’ value active learning in the classroom, but are reluctant to take content class time to conduct such activities. Faculty teaching in accelerated Pharm. D. programs face the additional challenge of developing and incorporating active learning into a year round curriculum with numerous team taught courses. The main purpose of the study was to identify the frequency and types of active learning techniques utilized by faculty teaching in an accelerated program. Method: A survey was developed by South University School of Pharmacy (SUSOP) Assessment Subcommittee which asked faculty to self identify the frequency and types of active learning tools utilized. The various active learning techniques used were further categorized based on the level(s) of Bloom’s Taxonomy they addressed. Results: SUSOP faculty used a variety of active learning techniques, however preliminary data suggests that traditional lectures, case studies, and student presentations were used most frequently to present course material. Active learning techniques such as audience response systems, games, and various classroom assessment techniques were used to a lesser extent. Implications: SUSOP faculty face unique challenges teaching year round, team taught courses that are often content-integrated and modular. The recommendation is for faculty to receive training in the use of concise and easily implemented active learning techniques in an accelerated curriculum. Training should also incorporate active learning techniques applicable to dual-classroom synchronous environment, as the opening of a distance satellite campus will further challenge SUSOP faculty.

Association of Coronary Heart Disease (CHD) Knowledge, Perceived Risk, Diet and Physical Activity Behaviors. Kimberly B. Blake, West Virginia University, Carole V. Harris, West Virginia University Health Research Center. Objectives: To determine the association between CHD knowledge, perceived risk and diet and physical activity levels in adults to help identify strategies for improving the effectiveness of health care provider communication. Method: An online survey was conducted in Appalachian adults with no prior history of CHD. Early recruitment took place among university employees, and will continue more broadly in the community to obtain a sample of 250. Items include CHD knowledge, perceived risk, and other components of the Health Belief Model (HBM), as well as diet and physical activity (PA) and demographic variables. The UC Davis Food Behavior Checklist (FBC) and physical activity items from the BRFSS were used to assess dietary behavior and physical activity levels. Other validated instruments were used to measure HBM variables. Higher scores represent higher levels of the measured construct. Descriptive statistics will be calculated and linear regression performed to determine the association between knowledge, perceived risk, and behavior. Results: Preliminary data analysis (n = 134) demonstrated the following demographic characteristics: 85% female; 64% married; 92% reported some college or college degree as highest level of education; and 52% reported total household income less than $70,000. Average CHD knowledge score was 11.4 (scale 0-20). Average perceived risk was 2.7 (scale 1-4). Average score on the FBC was 26 (scale 0-45). Further results will be forthcoming. Implications: This study will shed light on factors that influence likelihood to adhere to recommended lifestyle changes. A better understanding of these factors could improve effectiveness of health care provider communication and positively impact patient adherence.

Case Study of a Health Informatics Course for Pharmacy Students. Kevin T. Fuji, Creighton University, Kimberly A. Galt, Creighton University. Objectives: The national focus on using health information technology (HIT) to improve patient care across all healthcare settings necessitates that pharmacy graduates possess an understanding of health informatics. Literature reveals that minimal curricular offerings occur within schools of pharmacy to achieve this goal. This case study describes both the development of an elective health informatics course for pharmacy students as a first step to achieving curricular change and the effectiveness of the course and value of course content in the context of students’ professional training. Method: Course content was developed to meet the evolving needs of pharmacists to understand and use nationally-recognized content about health informatics that is useful in practice. A case study of the students enrolled in the elective course is in process. Multiple sources of data are being collected: classroom assessment techniques, quizzes, papers, exams, course evaluation, direct observations of student behaviors, and interaction with students. Results: Case analysis is bounded by the national context of HIT development and national standards for pharmacy education. A detailed description of the course is offered. Other data sources reveal two student themes: health informatics is a future career opportunity recognized by students; and the course is perceived as a unique course of preparation in the students’ program. Data collection and analysis will occur through the remainder of the semester. Implications: This course is a first step toward curricular integration of informatics knowledge into the Doctor of Pharmacy curriculum. It will also provide students with an introduction to additional career pathways post-graduation.

Comparative Evaluation of Using Standardized Patients vs. Peers in Communication Skills Lab. Nathaniel M. Rickles, Northeastern University, Phuong Tieu, Northeastern University, Afaf A. Baki, Northeastern University, Tammie Nguyen, Northeastern University, Selma Naidjate, Northeastern University, Anika A. Alam, Northeastern University. Objectives: We aimed to compare the impact of using standardized patients (SPs) vs. student peers on student communication skills and other student outcomes. Method: We used a prospective, random, cross-over design. Students were taped at week 1 using SPs. We randomly selected 3 of 6 communication lab sections to practice counseling with student peers during weeks 2 to 4. Three communication lab sections practiced counseling with SPs. Week 5, all students counseled SPs for their midterm lab exam. Weeks 6 to 8, students who met with peers during weeks 2 to 4 switched to practicing with SPs and those who were exposed to SPs switched to practicing with peers. Week 9, students were taped using SPs for their final lab exam. Two trained raters evaluated, using an evaluation tool, the baseline, midpoint, and final tapes. They were blinded to timing of tapes and lab section. Students completed midpoint and final surveys to assess experiences with whoever they had practiced with in lab prior to each survey. Descriptive statistics on raters’ scores and survey results, ANOVAs and post hoc tests will be performed to determine if those exposed to peers first differed in midterm and final scores from those exposed to SPs first. Thematic analysis will be conducted on open-ended student responses. Results: Study data will help differentiate the value of the using SPs in a communication lab. Comparative effectiveness studies, like this one, are needed to help pharmacy programs make
important economic and pedagogical decisions that support effective didactic methodologies.

**Comparison of Obsessive-Compulsive Behaviors in Pharmacy Students to Success in the Pharmacy Curriculum.** Laurel L. Andrews, The University of Louisiana at Monroe, Mary L. Caldwell, The University of Louisiana at Monroe, Kristen M. Morgan, The University of Louisiana at Monroe. **Objectives:** The purpose of this study is to evaluate (1) the prevalence of DSM-IV classified obsessive and compulsive behaviors in first, second, and third year Pharmacy students, and (2) to relate the presence of such behaviors to success or failure in the Pharmacy curriculum. **Method:** First, second, and third year pharmacy students were given a voluntary survey on the personal incidence of obsessive and compulsive behaviors using the DSM-IV diagnostic criteria for Obsessive - Compulsive Personality Disorder. The survey was constructed from the eight diagnostic criteria and based on a 5 point Likert Scale. Students also reported grade point averages, class level, and progression status. A follow-up personal interview was conducted by non-pharmacy personnel with randomly selected, consenting students to further assess the effects obsessive-compulsive behaviors have on their success in the College of Pharmacy. IRB approval was obtained prior to beginning the project. **Results:** Results are pending and will be analyzed using descriptive statistics and Chi-square tests. **Implications:** Results from the student survey will assess possible correlations that link obsessive and compulsive behaviors and success in the pharmacy program. Data will help faculty identify how their students approach class material and attain success in the program, as well as provide direction in assisting students.

**Correlation of Pharmacy Students’ Perceived Difficulty and Level of Interest in Pharmacotherapeutic Topics.** Jacob Frick, University of Southern Nevada, Ragini Bhakta, University of Southern Nevada, Lara Frick, University of Southern Nevada, Justin Kullgren, University of Southern Nevada, Alana Whittaker, University of Southern Nevada. **Objectives:** The purpose of this study is to identify correlations between students’ reported level of interest in a pharmacotherapeutic topic with their perceived difficulty in that topic. **Method:** A total of 135 second year pharmacy students in a three-year doctor of pharmacy program were asked to complete a questionnaire regarding level of interest and perceived difficulty of upcoming therapeutic blocks. The questionnaire was administered prior to any exposure to the therapeutic didactic curriculum. For each therapeutic topic, the student was asked to identify their level of interest in a subject, and perceived difficulty utilizing scales of 1 to 10. Descriptive statistics will be calculated for each scale to identify overall trends. Inferential statistics will be used to identify correlations between the level of interest and perceived difficulty. **Results:** A 100% (135/135) response rate was obtained. Data is currently being analyzed and will be reported. **Implications:** Results could be used to direct future instructional techniques to take advantage of the importance of interest in a therapeutic topic. The effects of perceived difficulty could encourage faculty cognizance of this psychological parameter. Thus, this principle may be addressed prior to the instruction of therapeutic material. Furthermore, correlations could be further utilized to determine their effect on academic performance.

**Course-embedded Assessment at a New School of Pharmacy: a Pilot Project.** Mona Gandhi, St. John Fisher College, Jill E. Lavigne, St. John Fisher College, Karl G. Williams, St. John Fisher College, Michael DeBisschop, St. John Fisher College. **Objectives:** This study evaluates the pilot implementation of a course-embedded method of assessment, in which student achievement of course outcomes are measured by required student coursework. **Method:** This method was piloted in six courses over one academic year at a new school of pharmacy. For each course, at the beginning of the semester, instructors selected several of the course’s stated learning outcomes to be evaluated. For each course outcome, instructors then chose several assessment points from among the required work in the course by which student achievement of the outcome could be measured. These assessment points included homework, projects, papers, and exam questions. By examining aggregate data from student performance on each of these assessment points, the instructors were able to measure overall student achievement of course outcomes. The instructors also documented the time needed to perform this assessment. **Results:** Results from three courses are completed to date, and data from all six courses will be presented at the meeting. With few exceptions, students performed well on all course outcomes. Instructors identified areas for improvement in their teaching for outcomes where students did poorer than expected. While the process of identifying outcomes and corresponding assessment points was not burdensome, data gathering and analysis was time-consuming. All instructors indicated that the results were useful in improving their teaching. **Implications:** Course-embedded assessment can be a useful tool to identify whether students are achieving course outcomes, and modify instruction accordingly. Additional logistics need to be worked out before expanding this assessment method to a larger scale.

**Developing an Occupational Health Needs Assessment and Experience Survey.** Suzanne Clark, University of Wyoming, Kem P. Krueger, University of Wyoming, Jamie L Johnson, University of Wyoming, Colton M Eisele, University of Wyoming, Christa M. Cooper, University of Wyoming (Dept of Social Work), Carol J. Kobulnicky, University of Wyoming, David M. Hunt, University of Wyoming (College of Business), Pamela M. Clarke, University of Wyoming. **Objectives:** Energy and extractive industries are dominant employers in Wyoming, a state with one of the highest national workplace fatality rates. Workplace injuries in these sectors provide challenges to healthcare professionals, especially in rural states. The objective is to develop an occupational health experience survey to identify training needs of healthcare providers. **Method:** P4 students conducted interviews plus literature/internet searches to identify energy-related workplace injuries and potential training gaps for healthcare providers. A survey was created to quantify experience with injuries from these sectors, desire for training, and training format preferences. The survey consists of 8 items. Survey iterations were reviewed by faculty and students from pharmacy, nursing, social work, and survey design specialists to improve the instrument’s face and content validity. The resultant survey will be pilot tested in the target audience (nurses, pharmacists, EMTs, firefighters, PAs, NPs, and physicians). Descriptive statistics will be used to describe healthcare provider experiences, training needs, and preference for training format. **Results:** Survey changes were made based on each review. The instrument has face and content validity. Analysis is pending instrument return. **Implications:** Local energy and mining injuries likely pose healthcare challenges not met by our current training system. Faculty want to develop an innovative interdisciplinary approach to combine rural community, state and university resources with content experts to meet the identified healthcare training gaps for first responders, first receivers, and providers caring for injured energy and mine workers. This could serve as a model program for Schools of Pharmacy in rural states.
Development of a Student Pharmacist Mentoring Program Serving Undergraduate Pre-Pharmacy Students at Campbell University. Mark Moore, Campbell University, Gabrielle F. Morgan, Campbell University, Brenda F. Blackman, Campbell University. Objectives: To develop a program to enhance the Campbell University undergraduate pre-pharmacy students’ understanding of the academic rigors and social challenges associated with becoming a student pharmacist. The program strives to provide student pharmacists the opportunity to develop their leadership skills by becoming a mentor to undergraduate pre-pharmacy students. Method: The professional staff charged with pre-pharmacy advisement worked closely with student leaders from the Pre-Pharmacy Club to evaluate unmet needs of the students enrolled in the pre-professional curriculum at Campbell University. Focus groups were held with student pharmacists and pre-professional students which yielded valuable information for the conceptual design of the program. The program pairs current student pharmacists, who wish to serve in a leadership role, with undergraduate students desiring mentorship. A variety of meetings and social activities have been planned to engage the student mentors and mentees. The pre-pharmacy and student pharmacist mentors are provided opportunities to build solid relationships based on respect, shared experiences, trust and reciprocity. Results: Approximately 150 pre-pharmacy students and 70 student pharmacists have been served through the program. A survey will be deployed at the end of the academic year to measure outcomes and personal satisfaction of the mentors and mentees. Implications: The program promotes the development of positive relationships between the pre-pharmacy and student pharmacists in order to provide a means of support and encouragement which may assist participants in achieving their educational goals. These valuable experiences provide insight, encouragement and motivation to aid future student pharmacists with managing the expectations and challenges of the professional program.

Evaluation of a Student-directed Current Events Requirement in a Healthcare Systems Course. Tara Jenkins, The University of Kansas. Objectives: To implement a student-directed US healthcare system current events requirement and evaluate its effectiveness in helping PharmD students develop a habit of following issues likely to affect pharmacists. Method: Students in a required healthcare systems course were informed that they were expected to develop a method outside of the classroom for staying current on evolving issues affecting US pharmacists. Ten percent of each exam covers current events at an unannounced time not coinciding with examinations to determine if they are staying abreast of changes or simply learning the material for the examinations. Student performance on current events issues will be aggregated and analyzed using descriptive statistics. Results: Preliminary results indicate that students are primarily getting information through email services or Twitter feeds. Final results on performance will be analyzed in May. Implications: The US healthcare system is ever-changing, and it is imperative that pharmacists have a mechanism to stay current on issues likely to affect them or their patients. This study evaluates the effectiveness of requiring students to develop this methodology for a course.

Examining the Relationship Between Organizational Culture, Work Attitudes, Job Roles and Organizational Change. Daniel C. Lane, University of Michigan, Caroline A. Gaither, University of Michigan, Sam Kim, University of Michigan, Mona Sadri, University of Michigan. Objectives: To investigate factors affecting organizational change within a pharmacy services department and to evaluate the effect of these changes on several measures of work attitudes and behaviors. Method: During this second phase of our innovative sequential-embedded mixed methods investigation, we surveyed all professional pharmacy staff in a large Midwestern health-system pharmacy organization (n=113). An online survey was developed based on rich narrative data obtained during phase I qualitative interviews with pharmacists practicing under a new practice model, Quinn and Cameron’s Competing Values Framework for organizational culture and previous research on pharmacists' work attitudes and behaviors. Respondents were asked to respond to items related to their job satisfaction; organizational culture; work environment; attitudes regarding a new practice model and other organizational changes; self-identity; perceived effects of economic conditions on their work attitudes, behaviors, and roles; and perceived and desired job roles/responsibilities. Data is being analyzed using a variety of parametric statistical methods including descriptive statistics, ANOVA, and advanced regression analyses. Results: The online-survey is currently open to respondents and collection will be completed by mid-March 2010. Implications: This phase of the study provides novel data from both administrative and practicing pharmacy staff during a period of major change within the pharmacy service organization. It will provide organizations with theory-driven evidence that there is an important and dynamic relationship between organizational culture, work attitudes and behaviors, and successful change within an organization. Additionally, it will expand the knowledge on how economic conditions affect pharmacists work attitudes and behaviors during and economic downturn.

Factors Affecting Students’ Perceptions of the Professional Role of a Pharmacist. Mary E. Kiersma, Purdue University, Kimberly S. Plake, Purdue University, Holly L. Mason, Purdue University. Objectives: The Accreditation Council on Pharmacy Education (ACPE) requires pharmacy schools to implement an evaluation plan to assess curricular outcomes and effectiveness. The evaluation plan, based on assessment methods, should comprise formative and summative measures used for evaluation of trends over time and improvement of courses. The primary objectives of this study are to evaluate pre-pharmacy and pharmacy students’ perceptions of the professional role of pharmacists and to determine the association between student perceptions of the professional role of a pharmacist, professional experiences, and student demographics over the course of the academic year. Method: A self-administered survey instrument will be distributed to all students (N=1061) enrolled in the pre-professional and professional curriculum at Purdue University at the start and completion of the academic year. The 57 item survey consists of questions regarding students’ perceptions of professional roles (e.g. role expectations, knowledge compared to other healthcare professionals), work experiences (e.g. length of employment, relationship to pharmacy studies), professional commitment, and demographics (e.g. gender, ethnicity). A seven point Likert scale (1=strongly disagree to 7=strongly agree) will be used to assess students’ perceptions. Results: Data were collected at the beginning of the academic year with a response rate of 87.9 percent. Data collection will be completed upon conclusion of the academic year to determine changes in perceptions over time. Descriptive statistics and t-tests will be performed to assess students’ perceptions. Final results are pending. Implications: Identifying students’ perceptions of the professional role of pharmacists can inform the modification of pharmacy courses, including introductory pharmacy practice experiences.
Faculty Survey to Determine Cultural Competency Content in Current Pharmacy Curriculum. Miki L. Finnin, The University of Oklahoma, Tamra S. Davis, The University of Oklahoma, Nancy Brahim, The University of Oklahoma, Alice E. Kirkpatrick, The University of Oklahoma, Michelle Lamb, The University of Oklahoma, Ann E. Lloyd, The University of Oklahoma, Kelly A. Murray, The University of Oklahoma, Teresa Nguyen, The University of Oklahoma, Gretchen L. Peirce, The University of Oklahoma, Lourdes G. Planas, The University of Oklahoma, Michael Pondrom, The University of Oklahoma. Objectives: The Accreditation Council for Pharmacy Education standards require students to develop skills in the area of cultural competency. Further, the Center for the Advancement of Pharmaceutical Education states in its 2004 Educational Outcomes that pharmacists are to demonstrate sensitivity to multicultural needs and adjust communication based upon cultural and contextual factors. In order to determine the level of preparation the students at the University of Oklahoma College of Pharmacy are currently receiving towards this goal, a survey was developed and distributed to faculty teaching within our curriculum. The study objectives are to determine what and how cultural competencies are taught and assessed, and how much time is devoted to their teaching. Method: Our sample included all University of Oklahoma College of Pharmacy full-time faculty, both didactic and experiential. The survey was deployed using the University of Oklahoma College of Pharmacy survey tool. Each faculty was sent the survey link via e-mail. Follow-up telephone calls and/or e-mails were used to prompt faculty who did not respond. Descriptive statistics of quantitative data will be calculated. Faculty comments will be assessed using qualitative analysis. Thematic coding will be used to categorize the data provided. Results: All data will be collected and analyzed prior to the annual meeting. Implications: The results of this project will be used to determine if a course dedicated to cultural competency is needed as part of the University of Oklahoma College of Pharmacy curriculum.

First Year of PharmCAS - The Aftermath: A School's Continued Journey through the Admissions Process. Joseph K. Bonnarens, Pacific University Oregon, Lonnie Anderson, Pacific University Oregon, Fawzy Elbarbry, Pacific University Oregon. Objectives: Evaluation of a School’s evolving admissions process and analyzing the issues faced by the program after one year in PharmCAS, a national application admissions process. Method: Pacific University School of Pharmacy recently completed its fifth admissions cycle. The School benefits from a University-driven admissions process, providing each professional program in the College of Health Professions with an admissions coordinator and application processing support. A descriptive analysis of the process and an overview of the results of the first four admissions cycles was provided and discussed last year. In addition, a speculative evaluation of PharmCAS was outlined in preparation for the transition into this national application admissions process. After successfully navigating the PharmCAS process, a thorough evaluation of this first year will be discussed. Results: A detailed description of how the program’s admission process faced, adapted, and endured through this major transition will be provided, comparing the speculative aspects of the program’s preparation to the actual experience of this year’s admissions cycle. While the program was prepared for some things, such as the repeated mantra of “prepare to double your applications,” a discussion regarding the expected and unexpected factors of this year’s process will be detailed. Implications: Identifying the challenges and obstacles experienced in the transition to a national application admissions process.

Health Fairs as a Recruitment Tool: Serve the Public, Train Student Pharmacists and Recruit Students. Mark Moore, Campbell University, William J. Taylor, Campbell University, Ronald W. Maddox, Campbell University, Mary M. Johnson, Campbell University, Gabrielle F. Morgan, Campbell University, Bronson Lee Lowery, Campbell University. Objectives: Health fairs provide a valuable public health service in any venue; however when nestled on a college campus, the health fair transforms into a training opportunity for student pharmacists and a recruitment tool for prospective students. Health fairs provide opportunities to raise awareness of hypertension, diabetes, substance abuse and nutrition, meanwhile introducing the faculty, staff and students within the college community to the role pharmacists play in providing public health services to the community. Method: Campbell University College of Pharmacy and Health Sciences (CUCPHS) has partnered with six colleges and universities in North Carolina to conduct health fairs on their respective campuses annually. Each health fair provides an avenue for student pharmacists to hone their clinical skills under the auspices of a practicing community pharmacist. While participating in the health fair, prospective students are made aware of a unique summer program designed to prepare underrepresented minority students to become pharmacists, hosted at CUCPHS. Results: Each year the health fairs impact approximately 500 faculty, staff and students at the six colleges and universities. Surveys of health fair participants indicated an increase in awareness of the pharmacist’s role in the healthcare setting. Approximately 30 students are recruited to participate in summer programming offered at CUCPHS. Additionally, 25-30 student pharmacists are trained in this setting by practicing pharmacists. Implications: Prospective students gain valuable awareness of chronic disease conditions and the pharmacist’s role in prevention and treatment. Summer program participants are afforded academic and networking advisement, as well as formal preparatory training for admissions testing.

Identifying Psychological Contract Breaches in Academic Pharmacy Using a Modified Delphi Procedure. Gretchen L. Peirce, The University of Oklahoma, Shane P. Desselle, The University of Oklahoma, Alan R. Spies, The University of Oklahoma, Tamra S. Davis, The University of Oklahoma, JoLaine R. Draugalis, The University of Oklahoma, Mark C. Bolino, The University of Oklahoma. Objectives: The objective of this study is to describe the unique components of colleges/schools of pharmacy faculty’s perceptions of perceived psychological contract breaches (PCBs). Method: Not previously described in pharmacy faculty, the nature of PCBs and development of this construct will be induced from an exploratory, nominative group technique, namely a modified Delphi procedure. A panel of approximately 12-15 experts, as suggested by the literature, will be assembled through purposive sampling to ensure representation of faculty from a range of disciplines, levels of experience, and types of institutions to provide as much insight as possible into the construct of interest. The Delphi procedure is expected to constitute approximately 3 rounds, with the first round eliciting examples of PCBs in an open-ended format, with the following 2 rounds involving the panel’s opinions and feedback about the appropriateness of tentative PCBs identified by their colleagues in the first round. Each round will consist of a survey and anonymous feedback on aggregated group responses in hopes of achieving a consensus on important PCB items used to inform a quantitative measure employed in a latter stage of the study. Results: An initial definition for PCBs concept has been identified, and open-ended questions comprising the Delphi’s first round iteration are under development. Additionally, an initial list of potential participants has been compiled. Implications: The rich

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Increasing an Understanding of Adherence through Interprofessional Education. Stacie M. Spencer, Massachusetts College of Pharmacy and Health Sciences-Boston, Paul J. Kiritsy, Massachusetts College of Pharmacy and Health Sciences-Boston. Objectives: Interprofessional education is essential in preparing future health professionals for the challenges of working within the health care system. A medication simulation assignment was created by faculty from Pharmacy and from Health Psychology to provide students from different health profession programs the opportunity to experience the challenges of adherence and to discuss methods for improving patient adherence. Method: Students representing a variety of health professions (Pharmacy, Premedical Studies, Health Sciences, and Health Psychology) who were enrolled in a Health Psychology course were given six prescriptions to be filled at the Community Practice Pharmacy at the College. Two days later, students were given three more prescriptions. Prescriptions were filled by 6th-year students in the Doctor of Pharmacy program who created the drop-off and pick-up experiences that would be typical of a community pharmacy. After three days of following the prescribed regimen, students submitted reaction papers. On the day papers were due, the 6th-year students and their Pharmacy professor joined the students in the Health Psychology course and their Health Psychology professor in a discussion of their experiences, challenges to adherence, and potential interventions to improve adherence. Results: Assessment of student reactions indicates that the simulation and the interprofessional collaboration contributed to student learning about adherence beyond what might be accomplished through didactic instruction alone. Implications: Using a simulation medication assignment which involves students and faculty from different health profession programs provides a unique opportunity to introduce issues related to adherence and ways in which health professionals contribute to improving adherence.

Learning Styles Assessment of 4 Pharmacy Class Cohorts at the University of Georgia College of Pharmacy. Henry H. Cobb, The University of Georgia, Sally A. Huston, The University of Georgia, Keith N. Herist, The University of Georgia. Objectives: To identify and compare learning styles of 4 pharmacy class cohorts, and to ascertain significant trends. Method: All students in the graduating class of 2014 were invited to complete the Index of Learning Styles (ILS). Comparisons will be made to cohorts graduating in 2002, 2006, and 2010. Approximately 90 percent of the students completed the 44-item questionnaire and scoring sheet. ILS dimensions include: 1) active-reflection, 2) sensing-intuitive, 3) visual-verbal, and 4) sequential-global. Eleven dichotomously scored questions are summed for each of the four dimensions. Data will be analyzed using SPSS. Results: Students graduating in 2014 are fairly balanced on the active (5.4 +/- 2.4) and reflective (5.6 +/- 2.4) dimension, and appear to be more sensing (7.39 +/- 2.63) than intuitive (3.61 +/- 2.63). This most recent group of students are more strongly visual (7.35 +/- 2.63) than verbal (3.65 +/- 2.63) learners. Students are somewhat more sequential (6.49 +/- 2.25) than global (4.51 +/- 2.25) learners. Means from this class will be compared to the 3 previous cohorts using t-tests. Visual inspection suggests this class is similar to previous years except in the visual/verbal domain: the most recent cohort appears to be more strongly visual. Implications: Teaching styles will need to be adapted for these more visual learners. These students appear increasingly adapted to distance and technological learning modalities.

Mandatory Chemical Dependency Training and its Role in a College of Pharmacy Curriculum. Timothy J. Church, Northeastern Ohio Universities Colleges of Medicine and Pharmacy, Richard J. Kasmer, Northeastern Ohio Universities Colleges of Medicine and Pharmacy, Donald C. Hart, Ohio Northern University, David D. Allen, Northeastern Ohio Universities Colleges of Medicine and Pharmacy. Objectives: To describe a mandatory course implemented for 3rd year pharmacy students utilized to educate about the risks and realities of chemical dependency among professionals. Method: The Northeastern Ohio Universities Colleges of Medicine & Pharmacy (NEOUCOP) developed a course focused on chemical dependency for implementation during Spring 2010. The format involved a total of 33 class hours over 11 sessions, community activities and two required readings. Core classroom topics included the disease of chemical dependency, models of addiction, drugs of abuse, pharmacists at risk, legal consequences, withdrawal and emotions, recovery, family and professional issues, returning to practice and relapse prevention. Several face-to-face interactions were required that included impaired professionals, a group recovery meeting, an attorney and Ohio pharmacy disciplinary case. Course assessments included two reflective essays and an essay exam. Results: An anonymous electronic post-course survey will be completed by all students and results will be reported. Key topics being assessed will include mandatory course completion, student awareness of issue, perceptions about impaired colleagues, ability to identify problem situations, licensure issues, course success and the value of additional training. Implications: NEOUCOP is taking a leadership role and has proactively altered the curriculum to educate, sensititize and prepare young and at risk professionals. Current statistics indicate that approximately one in six pharmacists may become addicted at sometime during their career. Thus, raising the awareness of students about the core issues early in their career is critical to prevention. Feedback generated by the survey will direct future course content and activities.

Meet Patient X: A Novel Approach Integrating Problem-based Learning, Medication Therapy Management and Patient Care. Joseph T. Dye, Mercer University, Jill M. Augustine, Mercer University. Objectives: Problem-based learning (PBL), medication therapy management (MTM) and patient care are important skills that students develop throughout the pharmacy curriculum. Challenges to introducing these skills include insufficient clinical knowledge, patient access, and opportunity to practice communication skills. The objective was to provide a mock practice experience where first year pharmacy students could apply concepts to known patients using a sequential and comprehensive approach. Method: Students were instructed to create Patient X, a fictional patient, based on an easily accessible, close personal confidant of the student (self, parent, friend) with a chronic illness. PBL, MTM, and patient caring exercises were applied to the mock interaction with Patient X. Upon completion, students evaluated how their thinking changed during this process. A qualitative analysis was done to determine major themes. Results: The qualitative analysis revealed 5 major themes: Efficiency - helped organize their patient approach in a stepped fashion; Complexity - revealed the complexity of health problems originally thought to be self-evident; The Whole Person - increased understanding patient's role in treatment and compliance; Specificity - increased specificity of recommended option and provided a menu of potential solutions; and Research - reinforced the importance of
“doing your homework” prior to formulating solutions. **Implications:** The qualitative analysis suggests that the Patient X project provided students with valuable insights that changed or strengthened their approach to problem solving, medication management, and patient care. Students’ use of a realistic, applied experiment appears to enhance translation of PBL knowledge to simulated practice in first year pharmacy students.

Motivational Interviewing Curriculum Content in US Health Professions Schools: A National Survey. Patrick Llewellyn, Auburn University, Jan Kavookjian, Auburn University, Tatjana Petrova, Auburn University. **Objectives:** Motivational Interviewing (MI) is a communication skills set reported to have impact on patient health behaviors when used appropriately. It is unclear how health professions schools are training future providers in this evidence-based brief intervention strategy. The objectives of this study are to assess the current/planned prevalence and logistics of MI content in US Schools of Pharmacy (SoP) and Medicine (SoM). **Method:** An online, anonymous survey is being conducted among all current US SoPs and SoMs using a modified Dillman approach. Three separate e-mail contacts were made with 10-day intervals to SoP faculty identified from the literature and the AACP Roster; for SoMs, curriculum/assessment administrators were identified from SoM web sites. Descriptive statistics will be employed for analysis. **Results:** Preliminary results (10%): respondents are 67% female, 50% SoP/SoM, average class size 101-125, 66% urban, 54% public. 54.5% indicated that MI is part of the curriculum (4.7 average hours) and having offered it for 1-7 years. MI content is part of other courses (mostly in 2nd professional year); only one SoP offers a stand-alone elective course in MI. One third of respondents do not assess MI competency; when assessed, OSCE is the most prevalent means. SoP/SoMs not offering MI have yet to respond about why not or future plans. **Implications:** Preliminary results suggest some schools have incorporated MI into their curricula. Continued analysis may reveal teaching/assessment methods other Schools interested in adopting MI could use. Early data include no responses from SoPs/SoMs not offering MI; this could introduce bias into the results.

Online AACP Public Health SIG Questionnaire Utilizing the Clinical Prevention and Population Health Curriculum Framework. David A. Gettman, D’Youville College, Mark Eckstein, D’Youville College, James D. Nash, Sullivan University, Sharon E. Connor, University of Pittsburgh, Justine Gortney, Wayne State University, Anandi V. Law, Western University of Health Sciences. **Objectives:** 1. Assess existing PharmD curricula that teach public health utilizing the Clinical Prevention and Population Health Curriculum Framework, and 2. Perform a baseline assessment of Public Health SIG members regarding the areas of public health practice and curriculum Framework, and 3. Identify how we could use. Early data include no responses from SoPs/SoMs not offering MI; this could introduce bias into the results. **Method:** A pre-tested on-line questionnaire will be administered to volunteers via qualtrics.com. Reminder e-mails will be sent to all non-respondents twice over a one month period. Subjects will be asked to answer whether or not their PharmD program addresses a total of 19 domains under the four components of the Framework. Subjects will also provide information related to their PharmD program, their own educational background, the teaching activities they participate in whether didactic and/or experiential, the targeted populations (general and/or underserved), the amount of time spent teaching, and the materials they utilize. Data will be analyzed using descriptive and inferential statistics. **Results:** The aim is to encourage curriculum committees to review their curricula regarding different aspects of public health. The results may reveal a variety of methods for teaching public health and integrating them into PharmD programs including use of service learning and problem based learning as well as more traditional educational approaches. The results may also encourage innovative approaches to interprofessional education in clinical prevention and population health. **Implications:** The Framework provides a structure for organizing monitoring, and communicating within and among professions. It was designed to provide guidelines for student education in the clinical health professions represented on the Healthy People Curriculum Task Force, but can be adapted by pharmacy educators to continuously improve their curricula.

Peer Mentoring: A Reciprocal Journey of Development for Student Pharmacists. Jane E. Wilson, The University of Oklahoma, Tammy L. Lamb, The University of Oklahoma. **Objectives:** To determine pharmacy students’ perceptions of the University of Oklahoma College of Pharmacy mentoring program. **Method:** Prior to orientation, incoming students received information about the program and completed a mentee questionnaire. Second and third year pharmacy students completed a mentor questionnaire and were paired with mentees based on specific demographics. Mentors attended a training session which consisted of listening skills, characteristics of first year students, and leadership strategies for peer mentoring. Mentors were required to contact their mentees at least five times during both the fall and spring semester and participate in two planned activities per semester. A survey consisting of 36 questions was administered to mentees at the end of the academic year to gauge interest in and benefits of the program. Survey questions addressed three categories: 1) P1 student perceptions regarding the benefits of the program, 2) P1 student perceptions regarding attitudes of their mentors, and 3) P1 students’ desire to become a student mentor as a P2 student. **Results:** 114 P1 mentees completed the survey. Preliminary data indicate that students believed that the mentoring program is beneficial. Additional data will be collected from both mentees and mentors this spring. **Implications:** It is hoped that results of the survey will provide information that will allow the program director to modify the mentoring program to better meet the needs of both mentees and mentors. Additionally, if results indicate that pharmacy students believe the program to be valuable this program could be replicated at other colleges of pharmacy.

Pharmacy Faculty’s Perceptions of Important Organizational Citizenship Behaviors. Gretchen L. Peirce, The University of Oklahoma, Shane P. Desselle, The University of Oklahoma, Alan R. Spies, The University of Oklahoma, Tamra S. Davis, The University of Oklahoma, JoLaine R. Draugalis, The University of Oklahoma, Mark C. Bolino, The University of Oklahoma. **Objectives:** The objective of this study is to identify pharmacy faculty’s perceptions of organizational citizenship behaviors (OCBs) important in promoting a sense of collegiality within the organization. **Method:** OCBs will be induced from a modified Delphi procedure. This was chosen over focus group methodology, which may stifle faculty participants’ true beliefs in the midst of other colleagues, particularly within the same institution. A panel of experts will be assembled through purposive sampling to ensure representation of faculty from a range of disciplines, levels of experience (including some with administrative roles), and types of institutions to provide rich and diverse contributions. Approximately 12-15 participants will be sought to comprise this panel, in an entirely unique procedure from a similar Delphi proposed to elicit perceived contract breaches. The Delphi procedure is expected to constitute approximately 3 rounds, with the first round eliciting examples of OCBs in an open-ended format, with the following 2 rounds aimed toward the panel converging their opinions on those OCBs most representative of a broad range of behaviors that may be
Pharmacy Practice and E-Health Leadership Strategies for the Patient-centered Medical Home. Marie A. Smith, University of Connecticut. Objectives: Pharmacists have an important role in patient-centered medical homes (PCMH) given that 71% of physician office visits involve medication therapy. With the growth of electronic health record (EHR) and e-prescribing (E-Rx) adoption, as well as emerging health information exchanges (HIE), pharmacists working in a PCMH practice model can access and contribute relevant patient-specific health information for improved medication use, safety, and care coordination. Objectives: 1. Identify the relevant elements of PCMH that present pharmacy practice leadership and E-Health opportunities. 2. Share E-prescribing and Health Information Exchange “lessons learned” that pharmacy programs can incorporate into PCMH models. 3. Describe innovative pharmacy practice PCMH models through partnerships with statewide pharmacy organizations, policymakers, and payers. 4. Recognize PCMH and E-Health implications for curriculum and faculty development. Method: Process: pharmacy faculty have pioneered strategic leadership roles in state-level practice organizations and state-wide HIT/HIE policy initiatives to advance pharmacist roles in PCMH. Results: Outcomes: 1. Implementation of primary care MTM and pharmacist care coordination services utilizing health information technology in a PCMH model. 2. Established pharmacy leadership policy-making advisory appointments to state-level health care reform committees on HIT, Medical Home, and Preventative Care. Implications: 1. Pharmacy leadership desired for E-Health collaborations between academia, policymakers, providers, payers, and e-health agencies. 2. Prototype for academia/state pharmacy association partnerships to form new business models for reimbursed pharmacist services in PCMH. 3. E-Health incorporated in pharmacy curriculum, scholarship opportunities, faculty development.

Pharmacy Student Entrepreneurial Orientation (PSEO) Scale: Developing a Baseline Measurement and Comparison. Renae J. Chesnut, Drake University, Timothy Sullivan, Drake University. Objectives: To develop a baseline measurement of students’ inclination toward becoming entrepreneurial leaders, or agents of change, within their chosen pharmacy work environment using the PSEO, a multi-dimensional scale. In addition, students entering the program were compared with those nearing the completion of their didactic education. Method: Second-year pre-pharmacy students and third-year professional program students were surveyed using the PSEO, a multi-dimensional tool that measures three factors (Factor 1: Proactiveness, Work Ethic, Empathic Supersalesperson; Factor 2: Innovativeness, Autonomy; Factor 3: Risk-Taking). In addition to the PSEO, demographic questions were also asked including: classification, gender, ethnicity, curricular plans (MBA/MPA/JD), career interest, post-graduate education plans, and family and personal experience with ownership and/or self-employment. Results: The response rate was 99% (N=156) for the 2nd year pre-pharmacy and 84% for the P3 students (N=100). The pre-pharmacy totals on the 3 factors were 71.34 (11 items; max=77), 44.43 (8 items; max=56), and 16 (2 items; max=21). The P3 students on the three factors were: Factor 1: 63.84, Factor 2: 39.15, and Factor 3: 14.61. Both groups had higher scores on Factor 1, followed by Factor 2. Preliminary analyses indicate minor differences in those students who plan to enter various career pathways, as well as in the family and personal experience with ownership and/or self-employment were identified. Implications: While predictive validity does not yet exist for the PSEO, this baseline measure may assist programs in determining whether those activities designed to develop agents of change or entrepreneurial leaders are having an effect on students’ PSEO scale.

Pharmacy Students’ and Professors’ Attitudes and Opinions toward Facebook and E-Professionalism. Laurin E. Dixon, The University of Mississippi, Donna S. West-Strum, The University of Mississippi. Objectives: Facebook is beneficial for many social uses but can present many challenges in regards to privacy and professionalism. The purpose of this study was to describe the faculty members’ and students’ opinions and attitudes toward Facebook, e-professionalism, and the impact of Facebook usage on personal personas. Method: An e-mail containing an informational letter and link to the electronic survey was sent to the student body and faculty at a southern school of pharmacy. The survey included questions concerning use of Facebook, attitudes toward e-professionalism and the role of pharmacy schools, opinions about online personas and professionalism, and general demographics. Data were analyzed using the Predictive Analytical Software (PASW, previously Statistical Package for Social Sciences-SPSS) package. Results: 141 students and 22 faculty members have responded to the survey and data collection is ongoing. Preliminary results indicate that 91.4% of students and 64% of faculty members have a Facebook page. Both populations use Facebook for the same reasons. However, they differ in their view of e-professionalism. 59% of students strongly disagreed with a professional code concerning Facebook while 68.5% of the faculty strongly agreed with it. 7.1% of faculty members reported posting unprofessional content, while 39.7% of students admitted they have posted unprofessional content. Implications: Further research is needed to understand the difference in student and faculty view of e-professionalism and the role of schools of pharmacy in educating and promoting e-professionalism.

Potential Impact of an Early Alert Technology on College of Pharmacy Students’ Success. Kimberly J. Dunn, Campbell University, Mark Moore, Campbell University, Mary M. Johnson, Campbell University, Wesley D. Rich, Campbell University, William J. Taylor, Campbell University. Objectives: To demonstrate the potential value of an electronic academic alert system by enhancing student-faculty communication, while improving academic success and overall student satisfaction. Method: The College of Pharmacy & Health Sciences conducted a pilot program utilizing an integrated software technology designed to provide a sophisticated framework for an academic alert system. The system provides tools to identify students who may be at risk for low academic performance as indicated by several possible triggers including attendance, lack of participation, and test scores. The system provides a communication mechanism to alert the student, appropriate faculty, and academic support staff. An analysis of the pilot data will provide preliminary information on the potential effectiveness of the early alert system. Results: Early data analysis indicates the system is an effective way to increase awareness, help engage students earlier in the academic period and motivate them to affect the changes necessary to improve their performance. Implications: The system may provide a more effective way to identify students with issues which may pose a risk for their academic performance earlier in the academic period. The system
also provides a platform for enhanced communication and scheduling of appointments with professional support staff and faculty members to aid in resolving student difficulties that may affect academic performance. It has the potential to create a positive dialogue between the college and the students by providing students with strategies to improve academic success.

Publication Patterns of Resident-Authored Abstracts Presented During the 2006-2007 Residency Year. Spencer E. Harpe, Virginia Commonwealth University, Deborah Sturpe, University of Maryland. Objectives: Residency program objectives often include the preparation of a written report based on the resident’s research project, and these projects are frequently presented at professional meetings as a poster. These projects may not be published, however, leaving the research process incomplete. Previous research has examined the publication patterns of meeting abstracts, but the focus was not on pharmacy residents. The purpose of this study is to examine the publication patterns of resident-authored abstracts during the 2006-2007 residency year. Method: PubMed, International Pharmaceutical Abstracts, Academic Search Complete, Web of Science, and Google will be searched to determine the publication status of resident-authored abstracts presented at the 2006 American Society of Health-System Pharmacists (ASHP) Midyear Clinical Meeting and the 2007 American Pharmacists Association (APhA) Annual Meeting. Results: There were 728 resident abstracts presented at the ASHP meeting and 56 at the APhA meeting. A random sample of 246 ASHP abstracts (~34% sample) and all APhA abstracts will be examined to determine the percentage that have been published. Place of publication and time to publication after conclusion of the residency year, when available, will be noted. Implications: These results will be helpful in estimating residency project publication rates. With the increased emphasis on scholarship in many pharmacy practice faculty positions, publication is an important activity, and experience with the publication process is an important skill for residents considering academic positions. Residents may not be adequately prepared for their future careers if the publication of residency projects is not emphasized and promoted.

Qualitative Behavioral Intervention Analysis of Pharmacy Students During Remediation Program. Keysha L. Bryant, Palm Beach Atlantic University, Jamie L. Fairclough, Palm Beach Atlantic University. Objectives: To assess the academic performance of pharmacy students after behavioral interventions during a summer school remediation program. Method: The summer remediation program was a three week program involving didactic teaching of first-year pharmacy students who failed one or more of the following courses (Clinical Applications, Drug Information, and Pharmaceutical Calculations I). A total of 6 students completed the summer remediation program. The students were given a pretest and a posttest in each failed subject. Students met on a daily basis for an 8 hour period (total of 108.5 hours) with faculty in their respective areas (Calculations Team, Clinical Application Team, or Drug Information Team). The students met weekly (total of 11.5 hours) with the Learning Strategies Development Team to address behavioral issues that could have contributed to the failure of the courses (motivation, stress, learning style, note taking). Results: Data were collected in the areas of motivation, stress management, VARK learning styles, and note taking. Students completed behavioral exercises and performed an overall Learning Strategies Survey at the end of the program. The average semester GPA of the students prior to the remediation process was 2.81. The average semester GPA of the students after the remediation process was 3.03. Academic records of the students were reviewed to validate their performance. Results will be displayed qualitatively. Implications: The behavioral interventions positively impacted the academic performance of the students participating in the program. These behavioral interventions should be implemented in all remediation programs.

Stress and Quality of Life in a Three-Year, Block System Doctor of Pharmacy Program. Lara Frick, University of Southern Nevada, Jacob Frick, University of Southern Nevada, Renee E. Coffman, University of Southern Nevada, Surajit Dey, University of Southern Nevada, Tamara B. Lee, University of Southern Nevada. Objectives: The purpose of this study is to identify stress and stress-related quality of life measures among second-year pharmacy students in a three-year doctor of pharmacy program that utilizes a block system. Secondary objectives include comparing results between this three year program to a previously published four year program and identifying stress coping mechanisms among students. Method: The study utilized a uniquely developed questionnaire relating to student stress and coping mechanisms. In addition, two previously utilized stress survey instruments will be used, including the Perceived Stress Scale (PSS) and the Short Form-12 (SF-12) Health Related Quality of Life (HRQOL) surveys. All second year doctor of pharmacy students will be included in the study. There will be no exclusions. The instruments will be administered in the classroom setting, using an anonymous, electronic questionnaire. The research team will administer the study. Results: Descriptive statistics will be calculated and presented for this cohort of students. Inferential statistics will be used to compare results from this three year program and a previously published four year program. Implications: Analyzing pharmacy student stressors will help direct future quality-of-life related improvement initiatives. Likewise, identifying any potential differences in stress between students in a three-year versus four-year program will provide additional insight into curricular design improvements. Furthermore, the incidence of potentially negative coping mechanisms could identify areas for intervention. Ultimately, the researchers hope to use the data to improve educational outcomes by understanding stress related quality of life measures among pharmacy students.

Student Pharmacist Ambassador Program: Utilization of Current Students to Enhance Recruitment. Gabrielle F. Morgan, Campbell University, Abbie M. Usina, Campbell University, Mark Moore, Campbell University, Lindsay D. Blackmon, Campbell University, Datti Rosana, Campbell University, Virginia R. Sloop Johnson, Campbell University. Objectives: Student ambassadors are valuable resources for recruiting new students. Campbell University College of Pharmacy and Health Sciences (CUCPHS) admissions staff utilizes a model of student ambassadors to recruit incoming professional students. Student ambassadors communicate and interact with prospective students throughout the admissions process, including open house, visitation and interview days, significantly contributing to the matriculation process by becoming experienced student mentors. Method: At CUCPHS, the ambassador program engages first year student pharmacists in communicating with prospective students, blogging on our website about their experiences in pharmacy school, leading question and answer sessions during open houses and interview days, and communicating with recently accepted applicants until they matriculate into pharmacy school. During a visitation program called, “Pharm Days”, ambassadors take prospective students to class and allow them to shadow throughout the day. Results: Twenty-five student ambassadors have communicated with approximately 300 prospective students and 85 matriculating student pharmacists during this current admissions cycle. A future survey of the
Student Posters in Pharmacy: Through the Lens and into the Classroom. Rabia Tahir, Touro College of Pharmacy-New York, Craig A. Kovera, Touro College of Pharmacy-New York. Objectives: In higher education, poster sessions have been used as a creative and stimulating alternative to traditional assessment methods in science. Student posters can be used as an educational tool to provide students with the opportunity to conduct independent research as part of their training and to develop skills in critical thinking and communication. This study will present data and insights on the prevalence and function of posters throughout pharmacy curriculums. Method: A national survey will be conducted on the use of posters in curriculums of U.S. and Canadian Pharmacy Schools. An appropriate contact for each school will be identified and asked questions about whether posters are used, and if so, how and when. Results: This study will present a review of the literature and discuss the role of student posters in professional education, including pharmacy. A summary of data gathered from a national survey of USA and Canadian pharmacy schools regarding poster prominence in the curriculum, along with current illustrations of how various institutions employ posters within the pharmacy curriculum, will be presented. Results will showcase innovative approaches in the use of posters for achieving educational objectives and outcomes. Implications: The outcome of this endeavor will include pearls for how to implement and assess posters. It will also provide guidance for determining the best circumstances for employing student posters. An examination of reactions to the poster process, both from the student and faculty perspectives, will also be presented.

The Influence of Information Contained Within Social Networking Sites on the Hiring Practices of Pharmacists. Kim M. Jones, Union University, Sean King, Union University. Objectives: There exists a gap in the pharmacy literature concerning the beliefs and attitudes of pharmacists towards information found within an on-line social networking site and its influence on hiring practices. Therefore, the purpose of this investigation is to assess the degree to which information contained within a social networking site influences the hiring decisions of pharmacy employers, pharmacy residency and pharmacy fellowship program directors. Method: Data will be collected through the use of an on-line, self-administered questionnaire. An e-mail containing a link to the questionnaire will be sent to potential subjects identified through ACCP’s on-line database of residency program and fellowship directors and through other e-mailing lists of pharmacy managers. Results: Descriptive statistics will be used to elucidate the beliefs and attitudes of pharmacists towards information contained within an on-line social networking site, the credibility of information found on social networking sites, and the influence of this on hiring practices. Comparisons will consist of those between gender classes, pharmacy practice settings, and age. All comparisons will be made at the 0.05 level of significance. Implications: Previous work has affirmed the opinion that professional students, including pharmacy students, should be held to higher standards regarding images portrayed on on-line social networking sites. Despite these opinions, research indicates that students seem to believe that information contained on social networking sites should not be considered by employers when making hiring decisions. Results from this research could improve potentially the manner in which schools of pharmacy educate and train pharmacy students for their future as health care professionals.

The Role of Blackboard® Discussion in a Medication Errors Elective Course. Robert M. Cisneros, Campbell University. Objectives: In a Medication Errors elective for P3 students (1 hr credit), class members were required to submit discussion contributions (“posts”) to the course Blackboard®. Posts were studied to identify ways to improve their role and value in the course as well as to improve methods for their assessment. Method: At least 2 posts (new or a reply) were required to be written each week for 4 weeks during the 5 week course. The instructor created topics related to patient safety issues to which the posts were made. Students could also suggest topics to the instructor. Posts could be made to any topic. Posts were “accepted” if thoughtful and pertinent to the topic and not merely a brief answer. Successful completion of the Blackboard® post requirements represented 5% of the final course grade. Analysis of posts included evaluation of length, relevance, and number per topic, as well as suggestions students may have made regarding the posts. Results: Analysis is ongoing. Thirty two students contributed 263 different posts in 14 different safety topic areas. These topics included: “Types of Errors I Have Seen/Made,” “Emily’s Law,” “Disclosure and Apology,” “How Should We Change Pharmacy to Reduce Stress and Errors,” “Accountability of Technicians/Pharmacists,” and “How Can We Get Pharmacists to Report More Errors.”
The Use of Shutterfly(r) in a Medication Errors Elective Course.

Robert M. Cisneros, *Campbell University.* **Objectives:** A project was initiated in the Fall Semester of 2009 which required student groups in a Medication Error elective at Campbell University College of Pharmacy and Health Sciences (CUCOPHS) to each create an educational module on a patient safety topic using Shutterfly®. Shutterfly® is an internet site commonly used for storing digital photographs but can be utilized to create educational modules. The project was intended to provide information which could assist a user or module creator in becoming more knowledgeable of safety issues related to the topic. **Method:** Students were instructed to divide into groups with a maximum of 5 members each. Groups could select their patient safety topics. The groups were given instructions on site creation as well as examples of Shutterfly sites for illustration purposes. Following the course the students were asked to complete a short survey asking for their experiences in completing the project and suggestions for improvement. **Results:** In a class of 32 students, eight groups were formed consisting of from 1 to 5 students each. Module titles included: “Pediatric Errors,” “Following 797: IV Room Safety,” “Pharmacy Feng Shui,” and “Herbals and Your Medications.” Components used in the sites included pictures and links to videos and articles. Some groups added quizzes. Student experiences are still being compiled. **Implications:** This type of project may have value in future medication error classes. In addition, at CUCOPHS, similar projects dealing with Pharmacy History and Workplace Issues have been planned for other courses.

Using a CD-based Proprietary NAPLEX Review Program to Longitudinally Assess Cohort 2 Students’ Knowledge Levels.

Monina R. Lahoz, *Massachusetts College of Pharmacy and Health Sciences-Worcester,* Paul P. Belliveau, *Massachusetts College of Pharmacy and Health Sciences-Worcester,* Alice Gardner, *Massachusetts College of Pharmacy and Health Sciences-Worcester,* Anna K. Morin, *Massachusetts College of Pharmacy and Health Sciences-Worcester.* **Objectives:** To continue to evaluate the utility of a proprietary NAPLEX review program to longitudinally assess students’ knowledge levels in an accelerated pharmacy program. Cohort 1 findings were presented at the 2009 AACP Annual Meeting. **Method:** Students are mandated to take a computerized comprehensive diagnostic exam (CDE) three times: at the beginning of Year 2, and towards the end of Years 2 and 3. The CDE consists of 100 NAPLEX-format questions randomly selected, with permission of the publisher, from a pool of over 1,000 questions in a commercially available NAPLEX preparation CD-ROM. Each question is classified into one of three NAPLEX Blueprint categories. Students have 2.5 hours to answer 54 questions pertaining to NAPLEX Area 1 topics (Assess Pharmacotherapy to Ensure Safe and Effective Therapeutic Outcomes), 35 questions in Area 2 topics (Assess Safe and Accurate Preparation and Dispensing of Medications), and 11 questions in Area 3 topics (Assess, Recommend, and Provide Health Care Information that Promotes Public Health). Repeated-measures ANOVA of Area and Total percent scores from the three CDEs will be performed. **Results:** 162 Cohort 2 students have analyzable Exam 1 and 2 scores. Preliminary results indicate significant within-subjects differences in the Total and Area 1 percent scores (p<.001), similar to Cohort 1 results. Future analyses will include Exam 3 data, and comparisons between Cohorts 1 and 2 results. **Implications:** The School’s Assessment Committee will be better able to assess the CDE’s usefulness in program and curricular assessment using data from two or more cohorts of students.

Utilization of a Structured Assessment Process for Learning Enhancement in an Integrated Therapeutics Laboratory Course.

Daphne B. Bernard, *Howard University.* **Objectives:** The School of Pharmacy uses an independent group for data analysis of course performance known as the Individual Development and Educational Assessment (IDEA) Center to evaluate teaching and learning effectiveness. Standardized instruments look to identify key learning objectives (labeled Essential or Important) as well as utilization of effective teaching and learning styles for specific courses. Individual course reports are provided by the IDEA Center for review. Reported strengths and challenges are highlighted to aid determination of where enhancements in course performance can be made. **Method:** The Integrated Therapeutics Lab I course was evaluated in the Spring of 2006. Course evaluations consisting of questions in the area of (1) students making progress on meeting twelve course learning objectives and (2) course / faculty utilization of five categories of teaching and learning styles were administered to the class. A designated evaluator functioning independently from the course coordinator administered the evaluations at a pre-determined time and date designated on the course syllabus. Approximately eighty-six students completed the evaluations. **Results:** As a result of the course evaluation findings, several changes were made in the course utilizing strategies to improve specific teaching and learning styles in the areas of Establishing Rapport and Structuring the Classroom Experience. **Implications:** Despite significant improvement in 2007, Establishing Rapport and Structuring the Classroom Experience were specific teaching methods and styles recognized as areas of focus for strengthening for both 2006 and 2007. Suggestions from faculty development workshops as well as peer faculty feedback continue to be utilized to further strengthen these areas.

What are the barriers in developing valid and reliable assessments? Eunice P. Chung, *Western University of Health Sciences,* Wallace J. Murray, *Western University of Health Sciences.* **Objectives:** Assessments are an integral part of a curriculum delivery. Following an examination or a quiz, the faculty facilitator for the course has the authority to drop questions or modify answer keys upon reviewing the item analysis report. Because high rates of such activity can compromise the validity of assessments, a study will be conducted to review the trend of this activity and identify any major preventable issues to minimize such activities in the future. **Method:** This is a retrospective study. Data captured for all multiple choice exams and quizzes administered during the two academic years 2008-2010 will be collected upon completion of 2009-2010 academic year. Detailed information included on item analysis report and faculty reasons for modifying the exam results will also be collected. Assessments not graded by Scantron and assessments conducted for experiential courses will be excluded. The rate of exam question dropping or double-keying of the answers will be evaluated for both academic years to evaluate the trend. A sub-analysis will also be conducted by each course. Descriptive statistics will be used to identify any major issues associated with modifying assessment results afterwards. **Results:** The results will be reported upon completion of the project. **Implications:** A well designed assessment should require minimal item elimination or answer key modification following the assessment results. The results of this study will be used to identify problematic areas and plan future faculty development programs in order.
to assist faculty members in developing more reliable and valid assessments.

“My First Employee”. Implementing a Pharmacy Personnel Course to Instill and Develop Management Skills. Richard J. Kasmer, Northeastern Ohio Universities Colleges of Medicine and Pharmacy, David D. Allen, Northeastern Ohio Universities Colleges of Medicine and Pharmacy. Objectives: To describe a mandatory course for 2nd year pharmacy students designed to introduce and develop management skills focused on the proper handling of daily personnel issues. Method: The Northeastern Ohio Universities Colleges of Medicine & Pharmacy developed a curriculum focused on developing core competencies related to personnel and management issues. The course involved a total of 42 classroom hours over a 21 week period. Core lectures included employee recruitment, retention, motivation, tardiness, absenteeism, stress, discrimination, sexual harassment, progressive discipline, performance appraisals, performance improvement and termination. All lectures were followed with small-group workshops designed to permit the students to practice and explore skill development on each topic with peers. The course culminated in an assessment of skills via a face-to-face interaction with a simulated problematic (faculty) employee and a unique case scenario that required a management decision. Students analyzed the employment scenario and rendered a decision (retain, discipline or terminate) about the future of “My First Employee”. All interactions were video-taped and graded on pre-determined variables. Results: An anonymous electronic post-course survey will be completed by all students and results will be reported. Future changes in the course design will be based on student input. Implications: This course provided students with an introductory exposure to common daily management issues encountered in the pharmacy environment. Supplemental activities will be required to solidify and expand their knowledge and skills in this area. We plan to offer additional opportunities in the curriculum via peer evaluation, mentoring, organizational leadership and rotational activities to assist in maturing these skills.

SCHOOL POSTERS

“SALT”ing the Curriculum: A Scholarly Approach to Assessment, Learning and Teaching. Sharon McDonough, Auburn University, Kristen L. Helms, Auburn University. For the past five years, a scholarly approach to using assessment for improvement of teaching and learning has been central to the work of the Auburn University Harrison School of Pharmacy (AUHSP). In 2005, the AUHSP implemented a new curriculum using the DACUM[1] process. Following this, a satellite campus was opened in 2007. Specific strategies have been developed to assess how well the curriculum is accomplishing the school’s educational outcomes and to compare curricular endeavors and student experiences between our two campuses. Assessment strategies incorporate the use of structured student, faculty, and stakeholder feedback to conduct individual course and curricular reviews. Review of the curriculum is an ongoing process in which individual courses are reviewed on a three-year cycle through collaborative effort of the faculty, staff, and students. Course coordinators provide artifacts and reflective critique of the course in preparation for course review. Artifacts include course mapping, course syllabus, sample activities, assessment tools, and students’ performance data and evaluations. Faculty members representing all departments are selected to serve on a committee responsible for this systematic review. Results of the course and curricular reviews are disseminated to faculty, and course coordinators are accountable to the curriculum committee to follow up with recommended changes for improvement. In addition, committee members are charged with ongoing assessment of the review process to enhance effectiveness and efficiency. [1] Norton RE. DACUM Handbook. Columbus OH: The Ohio State University; 1985.

A Novel, Multifaceted Approach to Teaching Life-Long Learning. Jennifer E. Heasley, Duquesne University, Jonathan M. Ogurchak, Duquesne University, Thomas J. Mattei, Duquesne University, Jennifer L. Padden, Duquesne University, Pamela H. Koerner, Duquesne University. Objectives: The Accreditation Council for Pharmacy Education requires that student pharmacists demonstrate competency with skills required to become life-long learners. New approaches other than traditional didactic lecture are being examined to facilitate these skills. A study was designed to assess the effectiveness of novel active learning techniques and technological tools to enhance the ability of student pharmacists to practice as independent, life-long learners. Methods: This research involves pharmacy elective courses (Men’s Health, and a combined Pregnancy/Lactation and Pediatric Pharmacotherapy course) designed to incorporate a combination of teaching tools, e.g. group work, student-driven research, wikis, podcasts, in-class presentations, didactic lectures, practice-based questions, and debates. Three assessments will be administered pre- and post-courses, which assess student pharmacist knowledge (course-specific), confidence (related to researching, identifying and interpreting appropriate literature), and satisfaction (with pharmacy curricula). The confidence and satisfaction results will be compared to a control group from two pharmacy elective courses that employ more traditional methods. Additionally, the Men’s Health course will assess weekly for a change in knowledge gained through two components of the course: student-driven research outside of class, and in-class learning. A baseline, post-research, and post-class quiz will be given for each Men’s Health topic area. Results: Results are pending and will be available at the conclusion of the Spring Semester 2010. Implications: This method could prove to be a valuable alternative to teaching traditional didactic lectures in order to promote life-long learning.

A Systematic Approach to Improving Teaching Evaluation Response Rates. Ann Zweger, Oregon State University, Nancy Baker, Oregon State University. Introduction: Faculty evaluations are a traditional way to measure instructional effectiveness and assist individual faculty with making improvements in teaching and course design. Meaningful evaluations are dependent on a significant number of students participating, as well as thoughtful completion of the evaluation. Large numbers of faculty and guest lecturers, limited classroom time, and student preference for technology have negatively affected quality and quantity of response rates in previous years. Objectives: Improve both quality and quantity of student completion of faculty evaluations. Methods: The College moved from a paper based system to an “opt-out” online system of faculty and lecturer evaluations over a 2 year period. During the first year all evaluations were conducted online. During the second year, evaluation log-in was required of students, although completion of the evaluation, per University policy, was not required. Evaluation requests were emailed on regularly scheduled days. A reminder email was sent 10 days after the initial request, and the evaluation closed 14 days after the initial email. Results: Response rates improved from less than 20% to over 70%. Written comments significantly increased. Student and faculty perceptions of the process will be assessed with surveys in spring term.
A “Sandwich” Approach to Enhancing the Scholarship of Teaching. Adam M. Persky, University of North Carolina at Chapel Hill, Wendy C. Cox, University of North Carolina at Chapel Hill, Kimberly H. DeLoatch, University of North Carolina at Chapel Hill, Timothy J. Ives, University of North Carolina at Chapel Hill, Gary M. Pollack, University of North Carolina at Chapel Hill. The UNC Eshelman School of Pharmacy has taken a multifaceted approach to promote the scholarship of teaching and learning (SoTL). This “sandwich” strategy combines efforts initiated by the School’s administration with grassroots faculty-driven initiatives, resulting in diverse and well-integrated support for the SoTL. Administratively, promotion and tenure guidelines were revised to include the SoTL as a route for promotion and tenure. The Center for Educational Advancement in Pharmacy (CEEP) was formed to encourage and advance innovative teaching, learning, and assessment practices, including the use of instructional and assessment technologies, and to promote and enhance scholarship within these areas. From the grassroots level, interested faculty formed a writing club to serve as a venue for peer collaboration to promote scholarship, especially in the areas of teaching, learning, and assessment. Faculty also initiated an education journal club to engage faculty in teaching and assessment best practices, and to promote the SoTL. Over a four-year time period, the number of posters, podium presentations, and publications on a national level in the area of education has increased more than five-fold. This growth encompasses the contributions of more than 25 different faculty members. A collaborative effort between CEEP, the Curriculum and Assessment Committees, and the Office of Curriculum and Assessment, resulted in a proposal for a faculty-driven peer teaching evaluation process. A reward system was also developed to recognize and promote teaching excellence and related scholarship.

Achieving the Scholarship of Assessment, Learning, and Teaching (SALT) through Strategic Planning. Adam VanWert, Wilkes University, Eric A. Wright, Wilkes University, Bernard W. Graham, Wilkes University, Harvey A. Jacobs, Wilkes University, Rhonda A. Waskiewicz, Wilkes University. The strategic planning process at Wilkes University’s School of Pharmacy (SOP) has undergone substantial adaptations since its formal inception in the 21st century. At this juncture, the plan is transitioning from a relatively immutable list of goals, to a highly dynamic, less cumbersome set of guidelines. Objective: To optimize assessment, learning, and teaching at Wilkes University’s SOP through strategic planning. Methods: This objective will be accomplished through the development of strategic initiatives and objectives. Current major strategic initiatives in the SOP include the (1) creation of a culture of research and scholarship, (2) realization of academic excellence, (3) development of a culture of integrative assessment, and (4) embracement and enhancement of inter-professional education. Relevant strategic objectives include the clarification of roles and responsibilities for SOP assessment and the establishment of departmental and school-wide goals for aggregate productivity of scholarship. Results: The strategic planning process has yielded a set of tangible goals that should facilitate the optimization of SALT in the SOP. This poster will provide the viewer with a diagrammatical representation of the evolution of the strategic plan, and the roles and communication scheme for SOP constituents accountable to the strategic plan. Implications: The establishment of a dynamically adapting strategic plan within the SOP, including readily understandable goals and a clear communication scheme, will allow optimization of SALT.

Advancing Application of Therapeutic Knowledge and Skills by Implementing Integration Courses Throughout the Curriculum. Eunice P. Chung, Western University of Health Sciences, Janice Hoffman, Western University of Health Sciences, James D. Scott, Western University of Health Sciences, Siu-Fun Wong, Western University of Health Sciences, Wallace J. Murray, Western University of Health Sciences. The therapeutics courses at WesternU are delivered in a block system, where students achieve mastery in one subject before moving on to the next. Sixteen blocks from P-2 to midblock of P-3 are dedicated to mastery of therapeutic knowledge and skills. To ensure that students can manage clinical cases in which patients present with multiple medical and social issues, the 5th, 10th, and 16th blocks are designed as integration blocks. These integration blocks are developed longitudinally to enhance and assess critical thinking skills, professional skills, and communication skills. Critical thinking skills in applying therapeutic knowledge are facilitated by comprehensive case discussions using different formats in each block. The topics for the comprehensive case discussions are pre-mapped to assure coverage of a broad spectrum of clinical topics and to prevent overlap between the different integration blocks. Faculty members are pre-assigned to serve as therapeutic experts for developing and facilitating case discussion. Students start from composing detailed SOAP notes to ensure thorough thought processing, then gradually transition to writing chart notes by the 16th block. Professional skills, along with communication skills, are assessed in multi-station Objective Structure Clinical Examination (OSCE) during each integration block using a cumulative list of pharmacy practice skills provided to the students prior to each integration block. The OSCEs are structured to sequentially increase in level of difficulty and weight heavier towards the course grade. While regular courses are necessary for mastery of new topics, the integration blocks are critical for advancing students to manage complex patient cases.

Advancing the Scholarship of Assessment, Learning and Teaching by Establishing a Center for Teaching Excellence. Timothy J. Todd, Midwestern University Chicago College of Pharmacy, Carrie A. Sincak, Midwestern University Chicago College of Pharmacy, Shridhar V. Andurkar, Midwestern University Chicago College of Pharmacy, Nancy Fjortoft, Midwestern University Chicago College of Pharmacy. Objective Midwestern University Chicago College of Pharmacy has a rich tradition of developing excellence in teaching and learning and has offered programs organized at the department, college, and university levels. The Center for Teaching Excellence was created during the 2005-2006 academic year with a mission “to promote, enhance, and assess the scholarship of teaching and learning.” The Center coalesced the existing departmental and college programs and established new curriculums and opportunities for professional advancement of the college’s faculty, residents, and preceptors. Process The Center’s oversight committee has focused on five core areas: preceptor development and recognition, faculty and resident development, peer evaluation of teaching, communication, and educational research. Activities were developed and implemented, outcomes data was collected, and activities were evaluated. Outcomes The initial focus of the committee was to collaborate with the Office of Experiential Education to create a three-tiered preceptor development curriculum. The first tier provides an overview of our college and introduces basic teaching concepts. The second tier is an intensive 15-hour continuing education program focused on teaching and learning. The final tier is a series of continuing education programs that integrate drug information skills with pharmacotherapy reviews. Similarly, the twelve-unit Teaching and Learning Curriculum (TLC) and seven-unit New Faculty Seminar Series were developed to expand the teaching skills and academia-focused knowledge.
An Integrated Peer-Review Annual Faculty Performance Review Process in the Pharmacy Practice Department. Gayle A. Brazeau, University at Buffalo, The State University of New York. Goal: The Pharmacy Practice Department in the School of Pharmacy and Pharmaceutical Sciences at the University at Buffalo designed an integrated performance review process (PRP) that enabled faculty members to be evaluated on all aspects of their scholarly activities including their teaching and learning (SOTL), teaching, clinical practice, service and barriers to professional development. Methods: The faculty PRP has evolved from the submission of an annual report followed by a meeting with the chair to a multi-step process incorporating peer review. The first step requires faculty members to complete an on-line faculty report which provides opportunities to outline their scholarly activities (including SOTL) and professional development goals. The next step involves a peer review process of each faculty member’s performance by a team composed of 1-2 senior faculty members and 2 junior faculty members who make recommendations to the Chair. The third step is the meeting of the faculty member with the Chair to review their performance based upon the annual report, the recommendations from the peer review team and to set goals for the next academic year. Results and Significance: This format enables faculty members at all stages of their career to participate in the annual faculty PRP. The advantages of this process include faculty members learning from each other and the various scholarly activities included those related to teaching and learning and co-mentorship of junior faculty members to provide peer feedback to their colleagues on how to improve all aspects related to their faculty performance.

An Interdisciplinary Approach to Teaching Medication Adherence: A Collaborative Between the Colleges of Pharmacy and Medicine. Katy E. Trinkley, The Ohio State University, Katherine A. Kelley, The Ohio State University, Michael S. Langan, The Ohio State University College of Medicine, Julie E. Legg, The Ohio State University, Virginia C. Duvall, The Ohio State University, Doug M. Post, The Ohio State University College of Medicine, M. Jane Goleman, The Ohio State University College of Medicine, Stuart J. Beatty, The Ohio State University. Purpose: Medication adherence is a challenging, yet essential component to optimal medication outcomes. This activity was designed for pharmacy and medicine students to experience the challenges of adherence, so they may better empathize with future patients and strategize methods to overcome potential barriers. A secondary objective was to provide an interdisciplinary learning experience. Description: This activity was the result of collaborative efforts from the Colleges of Pharmacy and Medicine at The Ohio State University. The core activity was to have pharmacy and medicine students adhere to a complex placebo “medication” regimen. To make this possible, student pharmacists across 3 graduating classes participated. Thirty six 1st year student pharmacists were responsible for filling and labeling 5 medication vials with empty gelatin capsules. A patient education handout was also included. The “medications” were dispensed by 100 3rd year student pharmacists to 127 2nd year pharmacy and 200 2nd year medicine students; half of the medicine students were counseled by student pharmacists. Then, 2nd year pharmacy and medicine students were instructed to take the “medications” as directed for 6 days and record their adherence. The 2nd year student pharmacists were required to write a reflective paper on the experience, while medicine students shared their experiences in small classroom discussions. Results and Future Directions: This activity was well received by both faculty and students of the Colleges of Pharmacy and Medicine. This collaborative activity will be repeated next year. In addition, other collaborative efforts between the two Colleges are anticipated in the near future.

An Inventory of the Scholarship of Assessment, Learning and Teaching at Northeastern University. Judith T. Barr, Northeastern University, Steven Bird, Northeastern University, Salvatore Pepe, Northeastern University, Matthew Wanat, Northeastern University, Debra A. Copeland, Northeastern University, Margarita V. DiVall, Northeastern University, Jennifer Kirwin, Northeastern University, Jennifer McIntosh, Northeastern University, Nathaniel M. Rickles, Northeastern University School of Pharmacy, Jenny A. Van Ambuirgh, Northeastern University, Robyn White, Northeastern University, John R. Reynolds, Northeastern University. Objective: To inventory and categorize current methods for scholarship of assessment, learning, and teaching (SALT) at Northeastern University School of Pharmacy (SOP). Methods: SOP faculty were surveyed to provide examples for demonstrating SALT activity at Northeastern. Four major SALT clusters were identified; several examples of each follow. Results: The Assessment cluster includes, in addition to course-specific assessments, longitudinal exit survey data used to guide curriculum review and programmatic improvement, documentation of APPE clinical interventions across the P4 year, and our peer observation and evaluation of teaching (POET) program. Also, a systematic curricular review process has been developed. The Learning cluster includes documentation and analysis of 25 IPPE and 35 APPE competencies and 25 ability-based programmatic outcomes as well as documentation of APPE clinical interventions across all sites. Also, based on curricular mapping, new population/public health materials were developed and their impact on student’s attitudes and beliefs was evaluated. The Teaching innovation cluster includes active learning strategies such as standardized patients for patient counseling and other communication modalities, original small group P3 capstone pharmacoeconomics projects, development of public service announcements in P2, and problem-based learning in some therapeutics modules. Also, based on curricular mapping and analysis, pathophysiology, self-care therapeutics, clinical therapeutics, and pharmaceutical care laboratory were combined into an integrated comprehensive disease management course. The Professional Development component includes longitudinal, professional development student portfolios engaging student-faculty mentor pairs throughout the student experience. Conclusion: Most activities have been presented at AACP platform and poster presentations and many published in peer review journals.

Applying Public Health Theories to Implement a Smoke-free Policy: A Pharmacy Practice Project. Christian B. Albano, North Dakota State University, Amber Altstadt, North Dakota State University, Natasha Petry, North Dakota State University, Laurel Aaberg, North Dakota State University, Dean Gross, North Dakota State University, Wendy Brown, North Dakota State University, Charles D. Peterson, North Dakota State University. Objective: The successfully advocacy for and implementation of a smoke-free campus policy by students and faculty from the College of Pharmacy, Nursing, and Allied Sciences at North Dakota State University (NDSU) demonstrates learning, research, and service enhancements. The project serves as an example of how Community-based Participatory
Research (CBPR) can be an excellent public health practice activity for students and faculty. **Methods:** Combined with evidence-based science (EBS) approaches, faculty members should consider CBPR approaches to enhance their teaching, research, and service. Public health policies, like smoke-free policies, are rooted in EBS, which is scientific results of “prevention programs and policies that are of proven efficacy, effectiveness, or readiness for adoption and will guide prevention scientists (policy makers and administrators) as they seek to discover, research, and bring to the field new prevention programs and policies” (Flay et al., 2005). **Results:** NDSU is a smoke-free campus. **Implications:** For effective implementation of a policy at the community (or university) level, the connection between CBPR and the cross cutting competencies set forth by the Associations of Schools of Public Health (ASPH) must be realized. Leadership, Communication and Informatics, Diversity and Culture, Public Health Biology, Professionalism, Program Planning, and Systems Thinking are the seven cross cutting competencies that ASPH deem central to public health practice to increase efficiency and effectiveness. While working as the primary advocacy group, it is important to understand that these cross-cutting competencies are vital to the successful implementation of a public health policy, program, or intervention.

**Assessing Professional Development - a Case for Practice Integration.** Rajesh Vadlapatla, Saint Joseph College, Blaine T. Smith, Saint Joseph College, James G. Henkel, Saint Joseph College, Joseph R. Ofosu, Saint Joseph College, Bruce Edgren, Saint Joseph College. **Objective:** To introduce an innovative assessment to track professional development in P2 year students in a three calendar year block curriculum. **Methods:** In addition to bi-weekly assessments via traditional exams, we will install another assessment, Practice Integration (PI). PI is a day-long assessment that follows each major therapeutic section in the P2 year. The instructor will identify ten students to present case material identified in their IPPE diaries. The purpose of this approach is three-fold. First we introduce a case-based evaluation that draws on each student’s 240 IPPE hours. It allows them to communicate their experience in light of the therapeutics section they just completed. The second purpose is to level-set the students in preparation for the APPE’s. The early PI sessions will serve as an alert to students not maximizing their IPPE’s and allow them the last 80 hours of IPPE to self-correct as needed. The third purpose of the PI is to identify disparities in the students’ IPPE’s as a quality assurance measure. It will provide useful information for directing future student placement and possible corrective action by the IPPE coordinator. **Results:** In all there are ten Practice Integration days scheduled for the P2 year. These assessments will identify student cases by drawing upon students’ IPPE diaries. The case presentations will be assessed through both instructor and peer review. **Implications:** Placing IPPE’s into the curriculum implies a rigor to assessing experiential education. The PI session is a method to apply standards both to the students and the site experience.

**Assessment Matrix to Facilitate Curricular Evaluation at the University of Pittsburgh School of Pharmacy.** Amy L. Seybert, University of Pittsburgh, Denise L. Howrie, University of Pittsburgh, Susan M. Meyer, University of Pittsburgh. **Objective:** To document achievement of student learning outcomes using a systematic process. **Methods:** The University of Pittsburgh espouses a culture of assessment and a commitment to meet stated curricular outcomes in each program. A tool to guide systematic curricular evaluation, the Assessment Matrix, was implemented in 2006 for Middle States Accreditation. The Matrix is a tool to guide systematic data gathering, analysis, and follow-up to evaluate curricular effectiveness, monitor student achievement of learning outcomes, and encourage continuous quality improvement. The PharmD Matrix is organized by the School’s 13 curricular outcomes and captures direct and indirect measures across the curriculum. The Education Team selected measures to be included and standards of comparison to interpret the data. The Matrix is repopulated annually and reviewed by the Curriculum Assessment Committee to develop an action plan for the upcoming year. The Matrix, inclusive of the action plan, is communicated to the Curriculum Committee, faculty, and the provost’s office. **Results:** The School employs numerous assessments and has built a defined process and infrastructure to support systematic use of data. The Matrix is a tool to facilitate this process and focuses evaluation information for the Curriculum Committee, the faculty, and University administrators. Several curricular quality improvements and innovations have occurred as a result of the use of the Matrix in the evaluation process. **Implications:** A systematic approach to curricular evaluation has led to objective documentation of achievement of curricular outcomes, sustainable curricular change, and open lines of communication and data sharing amongst faculty.

**Assessment of Curricular “Streams” of Knowledge and Skill Development.** Susan E. Conway, The University of Oklahoma, Melissa S. Medina, The University of Oklahoma, Nancy A. Letassy, The University of Oklahoma, Amy S. Williams, The University of Oklahoma, Clyde L. Hughes, The University of Oklahoma, Mark L. Britton, The University of Oklahoma. **Objectives:** Following curricular mapping and individual course peer-review, the University of Oklahoma College of Pharmacy continued their efforts in curricular review by assessing 18 topics (referred to as “streams” of knowledge and skill development) across the professional curriculum. **Methods:** The stream assessments were coordinated by the curriculum committee. The process included identification of streams, development and implementation of a survey instrument to collect data from course coordinators, development of a reporting tool to guide ad hoc committee work, selection of ad hoc committees (comprised of college faculty and adjunct preceptors), individual stream assessments carried out by ad hoc committees, and discussion of results among the full faculty. **Results:** Eight teams evaluated the following streams, some grouped together for efficiency of review: clinical communication; drug information; pharmaceutics and pharmacokinetics; pharmacy administration, law, ethics, and professionalism; decision making and problem solving; nonprescription products, preventative health, and special populations; pharmacy practice experiences; and pathophysiology, pharmacology, medicinal chemistry, and therapeutics. Each ad hoc committee evaluated the content, integration, and assessment of their assigned stream topic(s) across P-1 through P-4 years. The process culminated with a faculty retreat during which the results were presented and faculty members were polled to determine their recommended priorities for curricular improvement. **Implications:** The identified priorities were definition and clarification of program outcomes; improved coordination of streams across the curriculum; consistent repetition and assessment of pharmacy math skills beyond the P-1 math course; separation of nonprescription and self-care into an individual course; and improvement of skill development and critical thinking.

**Assessment of Teaching: Integrating Faculty, Department, and College Goals.** Charles R. Phillips, Drake University. **Objective:** To describe efforts to combine assessment of teaching with individual, department, and college goals. **Methods:** The College has used a standardized faculty evaluation instrument since 2004. Its use provides faculty feedback in the form of individual reports. The college also
receives aggregate data for all courses. Individual teaching reports are shared with faculty and their supervisor. These are part of annual evaluation discussions. A college aggregate teaching excellence goal was also established in 2008 by the faculty. The goal is assessed each year based on aggregate results of course evaluation data. In 2009, the College also began providing departmental teaching reports to supervisors. These track both faculty and course scores over time, regardless of instructor. Results: Both individual and course trends have been identified through the use of the faculty and departmental reports. This allows individuals to enhance their skills and aids in offering consistency across courses. The college-wide teaching goal was not reached during the first two years of use. This, in addition to other assessment data, suggested the need for more formalized orientation and mentoring programs for new faculty. Implications: Based on our results, the College has implemented a variety of strategies to enhance teaching and learning. Step one has included new faculty development programming. A mentor program directed in part at enhancing teaching skills has also been implemented. Step two has included an external expert to conduct all-faculty development programs on using results to improve teaching. Step three includes faculty-wide discussions on curricula and teaching methods.

Building Student Pharmacists' Practice Skills for IPPE Success: USP Chapter 797 Certification. Miriam A. Mobley Smith, Chicago State University, Lwandiko Masinde, Chicago State University, Elmer J. Gentry, Chicago State University, Dolores Nobles-Knight, Chicago State University. Objective: The United States Pharmacopeial Convention (USP) Chapter 797 focuses on the practice setting environment and techniques utilized by preparers of sterile products. In preparation for the Introductory Pharmacy Practice Experience (IPPE) institutional rotations occurring in the Professional Year 2 spring semester, competencies required in USP Chapter 797 are assessed and certified during completion of the Pharmaceutical Dosage Forms III (Sterile Dosage Forms) course in the preceding fall semester. An assessment of student learning and the value of that learning for the College's IPPE institutional practice partners was undertaken through a process incorporating student and preceptor feedback, assessment tools and student self-reflection. Methods: A comprehensive assessment rubric (pass-fail) was utilized to evaluate USP Chapter 797 competencies. A student learning self-assessment survey instrument was administered post-course completion and during the IPPE institutional rotation to measure pre/post competency and knowledge/skill acquisition as applicable to IPPE activities. A preceptor satisfaction survey was administered to assess the value of USP certification in IPPE student teaching and learning experiences, as well as impact on willingness to accept IPPE students possessing these skills. Results: The results will be presented at the 2010 AACP Annual Meeting. Implications: Educational strategies focused on the certification of student pharmacists in USP Chapter 797 competencies may help student preparedness for IPPE in institutional settings. Practice partners may be more motivated to accept IPPE students due to their value-added skills as demonstrated by certification in USP Chapter 797 competencies. Assessment results can guide faculty teaching and improve student learning of these skills.


Creating a Scholarship of Assessment, Learning, and Teaching Group in a School of Pharmacy. Spencer E. Harpe, Virginia Commonwealth University, Lisa B. Phipps, Virginia Commonwealth University, Brigitte L. Sicat, Virginia Commonwealth University.
**Objective:** Over the past few years, several changes have occurred within the Virginia Commonwealth University School of Pharmacy including the use of new teaching strategies and the implementation of a new curriculum. Furthermore, there is an expansion of the scholarly interests of faculty that can be seen in the publication and presentation of projects related to the scholarship of assessment, learning, and teaching (SALT). Our experience in developing a SALT group is described. **Methods:** An online survey was created to assess faculty interest in developing a SALT group. The survey asked 62 full-time faculty with teaching duties to indicate their anticipated level of involvement and desired meeting frequency, to evaluate a list of topics that could be discussed at SALT meetings, and to provide additional comments. **Results:** Of the 34 responses, 17 were interested in regular participation while 11 were interested in using the group occasionally. Over 60% felt the group should meet every other month or quarterly. Most respondents felt that topics such as selecting appropriate study designs, locating funding sources, obtaining feedback on SALT projects, and identifying collaborators would be extremely beneficial. **Implications:** It is anticipated that this group will serve as a meeting place to discuss issues relevant to SALT, facilitate interaction and collaboration among faculty, and serve as a resource for those interested in becoming involved in SALT. This group could serve as a source of professional development and a way for faculty to increase scholarship while improving student learning.

**Creating and Sustaining a Culture of Scholarship at Touro College of Pharmacy.** Mariana Babayeva, Touro College of Pharmacy - New York, Shariq Ali, Touro College of Pharmacy - New York, Thomas J. Cook, Touro College of Pharmacy - New York. An objective of Touro College of Pharmacy in New York (TCOP) is to create a sustainable academic environment that encourages scholarship in teaching, learning and assessment within the faculty of an emerging school of pharmacy. A comprehensive climate for scholarship in assessment, learning and teaching (SALT) has been cultivated from the inception of TCOP. Invigorating teaching approaches, particularly blended learning and team-based learning, have been implemented and emphasized from the onset of the program. To foster a culture of scholarship in teaching, learning and assessment, SALT opportunities have been emphasized throughout the program. Policies and programs have been created at the committee, department, and school levels to institutionalize scholarship goals and further strengthen the culture. Examples include: Workshops on blended learning and team-based learning; Designing and implementing a college-wide academic planning process including an annual academic plan with SMART (Specific, Measurable, Attainable, Realistic and Timely) goals for each faculty; Extensive use of technology for enhancing teaching and learning; Integrating the curriculum across pharmacy disciplines and public health; Emphasizing service learning with faculty serving as role models; Establishing a system of continuous review and assessment of the curriculum and other functions of the school; Creating student learning assessment methods that reflect the curriculum and teaching methods. With these and other efforts, TCOP emphasizes a scholarship philosophy for the advancement of teaching, learning and assessment in pharmacy. A robust, sustainable culture thrives at TCOP that provides multiple opportunities for faculty to pursue efforts in SALT.

**Cross-Course Testing - Concept and Implementation of Coordinated Quizzes at the UMB School Of Pharmacy.** Lisa Lebovitz, University of Maryland, Douglas Nutter, University of Maryland, Yunting Fu, University of Maryland, David S. Roffman, University of Maryland, Richard Dalby, University of Maryland. **Objective:** To implement frequent cross-course testing in Fall 2009 with the goal of providing formative assessment and early detection of academic difficulty during the first year of a redesigned Pharm.D. curriculum. **Background:** Our 2006 ACPE reaccreditation report suggested we move therapeutics, which was concentrated in the P3 year, earlier in the Pharm.D. curriculum to “help students see the relevance of other course material offered in the early years of the program.” We used the opportunity to integrate concepts across courses, and added frequent formative assessments to alert faculty to any emerging issues in the new curriculum and to provide a structure that paced student learning and minimized cramming before exams. Historically, our P1 courses typically incorporated three examinations per semester. **Process:** Every 2-3 weeks each P1 course master submitted approximately 5 questions which were screened for redundancy then compiled into a single Coordinated Quiz which was administered to students at one sitting. The five Fall 2009 quizzes were scored and grades distributed via Blackboard. Each quiz in each course accounted for only 2-5% of the student’s grade. A subset of students was interviewed and the remainder surveyed for feedback at the midpoint of the semester. **Results:** Quiz and exam scores were correlated. Academic Affairs was able to alert faculty to students showing signs of academic difficulty before the high stakes exams. Students indicated that the P1 course material was well integrated and the relevance was obvious. **Implications:** Coordinated quizzes are useful to monitor student progress during implementation of a new curriculum.

**Curricular Alignment of ACPE Standards 2007 and NAPLEX Blueprint at the University of Puerto Rico.** Edna Almodovar, University of Puerto Rico, Elga E. Vega de Rivera, University of Puerto Rico, Wanda T. Maldonado, University of Puerto Rico. The curricular committee performed an alignment of the NAPLEX Blueprint, the suggested science foundation for the curriculum as proposed in the ACPE Standards 2007 Appendix B, and the Doctor of Pharmacy Program curriculum at the University of Puerto Rico. **Objective:** Assess how the curricular content addresses the ACPE Standards 2007 guidance on science foundation for the curriculum and the NAPLEX Blueprint. **Methodology:** Course syllabi from all required courses as well as additional material submitted by course coordinators were evaluated. Information regarding topics addressed and hours assigned was documented. **Results:** All NAPLEX competency statements are addressed in the required curricular content, except for NAPLEX competency statement 3.2.1, which was recently revised to include the topic of vaccinations. Content areas that need to be revised include NAPLEX Blueprint Area 2. ACPE Standards 2007 areas that need to be revised include pharmacognosy and alternative and complementary treatments, toxicology and select patient assessment topics. **Implications:** This curricular alignment exercise represents a valuable assessment tool in the school-wide curricular revision process. These findings are being utilized for curricular evaluation and revision and continuous quality improvement.

**Curriculum Mapping: A Layered Approach to Understanding the Curriculum.** Nancy E. Kawahara, Loma Linda University, Cynthia Johnson, Loma Linda University, Hyma P. Gogineni, Loma Linda University. The Accreditation Council for Pharmacy Education (ACPE) and the Western Association of Schools and Colleges (WASC) requires schools/colleges to link programmatic student learning outcomes to the curriculum. A delegation from the Loma Linda University School of Pharmacy Assessment Committee had the fortunate opportunity to attend a day long pre-workshop associated with the Assessment Institute in Indianapolis, in October of 2009, at
Development and Assessment of new Correlated Pharmacy Problem Solving Courses. Jeffrey Aeschlimann, University of Connecticut, Kathryn Wheeler, University of Connecticut, Lauren S. Schlesselman, University of Connecticut. UConn School of Pharmacy developed 5-part Correlated Pharmacy Problem Solving (CPPS) course series within its new curriculum. Overarching goals included utilizing active learning activities to develop critical thinking and communication skills, while integrating curricular concepts. In first course, activities evaluated learning in lower levels of Bloom’s taxonomy. Dual assessment tools evaluated outcomes, student preparation, and class participation. Faculty surveys and student assessments evaluated assessment tool effectiveness. In second course, we developed novel activities requiring utilization of knowledge across semesters, refined and validated standardized data collection form (DCF) to document quality and quantity of student communications, and obtained student feedback on the degree that course met predefined goals. For first goal, we developed P1 “key concept” review session requiring student groups to complete case-based examination pertaining to foundation science, social-administrative pharmacy, and therapeutics. Groups also developed case-based learning activity involving concepts from multiple courses. For second goal, during first 3 weeks course coordinators and others pilot-tested and refined DCF. Midpoint and end-of-semester evaluation based on DCF were provided to each student and group. Overall, student feedback on course was positive with 71% agreeing/strongly agreeing activities gave opportunities to “problem solve,” 61% that developing own case-based activity helped understanding of application of different courses to pharmacotherapeutic problems, and 71% that individual plus group assessment is important. Only 31% agreed DCF documented participation accurately. Activities appear to meet our first goal quite well. Targeted improvement will be DCF refinement to better document in-class communication, both in the opinion of the faculty and students.

Development and Implementation of a New Faculty Orientation Seminar. Frank L Hughes, Rutgers, The State University of New Jersey, Mary M. Bridgeman, Rutgers, The State University of New Jersey, Rolee Pathak, Rutgers, The State University of New Jersey, Kevin Rynn, , Rutgers, The State University of New Jersey. Objective: To introduce new faculty to (i) the pharmacy program curriculum; (ii) expectations for students on advanced practice experiences; (iii) university expectations for promotion and reappointment; (iv) strategies for promoting active learning and professionalism in the classroom. Methods: New pharmacy faculty members often begin their appointments without considerable exposure to the various aspects of their teaching positions. The Pharmacy Practice Department felt there was a need to develop a program to introduce new faculty to pedagogy and concepts in pharmacy education. Starting in 2006, the department developed a New Faculty Orientation and Faculty Development day which focused on developing skills in areas including writing learning objectives, item writing, active learning strategies, and encouraging professionalism in the classroom. Additional topics included introduction to curriculum and expectations for promotion and reappointment. Faculty participants were asked to complete an assessment of the program and offer suggestions for improvement. Results: More than 20 new faculty members have participated in this program. Aspects identified by participants to be most useful included review of curriculum, development of learning objectives and item writing. Suggestions for improvement included expanding concepts introduced into mini-workshops, making the program more interactive, and taking real examples of poor items and having participants revise them into stronger test items. Implications: A New Faculty Orientation and Faculty Development program was identified as a useful tool for new faculty, particularly those transitioning from residencies without formal teaching experiences. Other faculty development seminars have stemmed from concepts and suggestions that have come from this program.

Development of an Assessment Map and Plan for a Doctor of Pharmacy Program with Two Campuses. Suzanne M. Rabi, University of Illinois at Chicago, Amy E. Lodolce, University of Illinois, Nicholas G. Popovich, University of Illinois at Chicago, Norman L. Katz, University of Illinois at Chicago, Bradley C. Cannon, University of Illinois at Chicago, Marieke D. Schoen, University of Illinois at Chicago. Objectives: Currently, 24 schools in the US have distance campuses for pharmacy education. The Accreditation Council for Pharmacy Education (ACPE) requires an extensive assessment plan for all colleges particularly those that have distance campuses to ensure the quality of education. University of Illinois at Chicago (UIC) will open its satellite campus in Fall 2010. The goal of this project was to develop a high quality assessment plan for a doctor of pharmacy program with a satellite campus. Methods: The assessment committee at UIC was charged with the task of developing an assessment map and plan for the two campus model. The current assessment plan at UIC in addition to assessment plans from five other colleges of pharmacy, current literature on satellite campuses and ACPE standards were evaluated to assist in the development of the assessment plan. Results: Within one month, an actionable assessment plan and map were developed based on the review and feedback of the committee. The assessment map is related to four areas: program, student, faculty and preceptor. The assessment plan includes information related to benchmarks, sources, storage and utilization of data. They both clearly outline how learning will be assessed and are based on the program’s mission. Implications: Although there is limited published literature related to assessment plans for colleges of pharmacy with satellite campuses, UIC was able to develop a comprehensive assessment map and plan, aligned with ACPE standards. The plan has attainable goals which is a key component to the utilization.

Emergencies in the Community Pharmacy - Human Patient Simulation. Jennifer D. Robinson, Washington State University, Brenda S. Bray, Washington State University, Megan N. Willson, Washington State University. Objective: To implement a simulation based exercise focused on medical emergencies seen in the outpatient setting. Methods: An education module was created for the Applied
Patient Care Laboratory III to expose second year student pharmacists to emergencies in an ambulatory community pharmacy setting. The five emergencies covered were a medication related allergic reaction, acute asthma attack, hypoglycemia, myocardial infarction and stroke. The student pharmacists were broken into groups of 3 or 4. Each group was required to use patient assessment techniques to determine which emergency the patient was experiencing and administered appropriate treatment in a timely manner. Following each small group simulation a debriefing session was conducted to allow the students to reflect on the interaction and grow from the experience. 

**Results:** This module was well received by everyone participating in the exercise. The simulation experience immersed the student pharmacists in a stressful situation that challenged them in various ways. Patient assessment techniques, communication skills, application of therapeutic knowledge, and teamwork were all seen during the scenarios. During debriefing the student pharmacists determined where gaps in care had occurred and how to change behaviors to improve care in the future.

**Implications:** The use of simulation in an outpatient pharmacy setting allowed the student pharmacists to apply their knowledge in a safe environment. By using simulation not only was knowledge tested but also the students ability to clearly communicate, apply assessment techniques and work in team.

**Evaluation of a Top 200 Class utilizing Active and Self-Directed Learning Techniques.** Richard O’Brota, St. John Fisher College, Scott A. Swigart, St. John Fisher College. **Objective:** The objective of this study was to evaluate the impact active learning techniques and self directed learning strategies had on first year pharmacy students in a one credit Top 200 course. Group work, presentation skills and peer evaluations were utilized to employ learning domains beyond recall. 

**Methods:** The class of 73 students was divided into thirteen groups. Each group was responsible for documenting predetermined information for a list of approximately 12 drugs using the SFI Pharmacy Drug Cards®. Each week the material documented was then presented to the class by a group member randomly selected by the instructor. A question and answer period followed each presentation with the instructor taking the role of facilitator. The presenter was then evaluated by all the teams using criteria adapted from the experiential manual. Students were asked to complete an electronic survey assessing the student’s perception of the unique format of the class. Group work, workload, and testing methods were some criteria used to evaluate the class. 

**Results:** Forty-six surveys were completed for a 63% response rate. All 9 multiple choice questions had a response of >3.0 (neutral) using a scale of 1-5 ranging from strongly disagree (1) to strongly agree (5). The average for all questions was 4.0 (agree) with a standard deviation of 0.95. 

**Implications:** The active and self-directed learning techniques were viewed favorably by students in a Top 200 class. Further study of these techniques in a Top 200 class should occur in order to maximize their benefits.

**Evolution of the Annual Student Assessment and Progression Exam: A Tool for Measuring Student Competency.** Sushma Ramsinghani, University of the Incarnate Word, Rebecca L. Brady, University of the Incarnate Word, Helmut B. Gottlieb, University of the Incarnate Word, Adeola O. Grillo, University of the Incarnate Word, David F. Maize, University of the Incarnate Word, Marcos Oliveira, University of the Incarnate Word, John M Tovar, University of the Incarnate Word, Amy Witte, University of the Incarnate Word, Arcelia M. Johnson-Fannin, University of the Incarnate Word. **Objective:** The Annual Student Assessment and Progression (ASAP) exam is given at the professional P1 through P3 level to evaluate competency in student outcomes as described by the FSOP Student Outcomes Document. 

**Methods:** The ASAP exams are comprehensive. Questions for each exam originate from courses taught up to that point in the curriculum. Each question is mapped to a student outcome. The exams are assembled to ensure maximum coverage of outcomes in an equitable distribution of questions with respect to course credit hours. A new case-based format for the P3 ASAP exam was designed. Pharmacy Practice faculty developed case(s) for each pharmacotherapy module. Faculty then wrote case-pertinent questions within their specialties in therapeutics, pharmacology, medicinal chemistry, and other pharmaceutical sciences. Successful completion of the P3 ASAP exam is required for progression to the next academic level. Students unsuccessful in the first attempt are provided an outcomes map to direct preparation for the second attempt. 

**Results:** The first-time success rate was 86% and 96% in the P2 and P3 ASAP exams for the Class of 2010, and 95% in the P2 ASAP exam for the Class of 2011. All students who required a second attempt were successful. 

**Implications:** Competency in student outcomes at FSOP is ensured through the ASAP exams. A case-based exam, reflective of NAPLEX, has been developed that requires higher orders of cognitive ability in the therapeutic decision process. Low-scoring outcomes on the ASAP exams will be used to identify areas of curriculum needing enhancement.

**Facilitating Scholarly Interchange Via Electronic Media.** Julianna E. Szilagyi, University of Houston, Lindsay Schwarz, University of Houston, Shari Mauthner, University of Houston. Initiated ten years ago, a college brown-bag lunch time discussion group, SALT (Scholarship of Assessment, Learning, and Teaching) provided college faculty a collegial traditional venue (face-to-face) to share innovative teaching, learning and assessment approaches in our college. Additionally, SALT served as a mechanism of support and encouragement to both new and seasoned faculty. Difficulty in scheduling and parking issues due to our split campus made it increasingly difficult to select face-to-face meeting times, thus diminishing opportunities for discourse among faculty. To overcome distance and facilitate interaction, Moodle, a virtual meeting space is currently offered to our faculty. This Open Source software allows participants from anywhere to contribute, thereby including colleagues from other institutions and enhancing the exchange of information and ideas. Topics that have been posted to stimulate discussion include one on faculty evaluations that addresses whether we are asking the right questions to provide useful feedback. We also used Moodle to share information gathered at a conference, including a key point asking the question, are there disengaged students or disengaging presentations. Another topic addressed the value and implementation of peer assessment of teaching. Virtual meeting participants are encouraged to use creativity, innovation, and thinking outside the box to address topics, problems and solutions. The ease with which members of SALT can participate anytime or anywhere will enhance the development of the Scholarship of Assessment, Learning and Teaching in our college.

**Faculty Mentoring: Aiding in Transition from Theory to Practice.** Beverly Hamilton, Hampton University, Corinne Ramaley, Hampton University. **Objectives:** In accordance with the Hampton University Assessment Plan, the School of Pharmacy established a faculty mentoring program in fall 2009 to aid the transition and acclimation of new professors into academia. The goals of the program are to 1) improve teaching performance 2) enhance student performance outcomes 3) provide guidance in scholarly activity 4) enhance faculty retention and 5) satisfy ACPE requirements.
Methods: Each new faculty is paired with a mentor for the first two years of teaching. Mentors assist their mentees with 1) classroom management 2) instructional preparation/assessment and 3) establishment of scholarly activities. Mentors are required to contact their mentees weekly, observe their mentee in the classroom at least once per semester, make suggestions for improvement and keep a mentor/mentee log. Results: Results from a survey of participating faculty indicate that 80% of respondents felt the mentoring program is a good experience and 90% of respondents felt they now have a greater understanding of their own personal and professional values and goals. Mentees feel that mentors contributed to their development in all areas. Student evaluations of new professors demonstrate satisfaction with their quality of instruction, teaching effectiveness and classroom management. Implications: Implementation of a mentoring program has not only improved the confidence of new faculty, but has also enhanced the self-esteem of seasoned professors who enjoy their role as experienced, supportive mentors. The mentorship program is also expected to help new faculty meet milestones in their academic careers, which will help them achieve promotion and tenure.

First Year of Collaborative Learning Practicum: Integration of Teaching, Learning, Assessment and Implications for Scholarship. David A. Gettman, D’Youville College, Robert K. Drobitch, D’Youville College, Teresa E. Donegan, D’Youville College, Gary P. Stoehr, D’Youville College. The D’Youville College School of Pharmacy has developed a longitudinal 6-semester Collaborative Learning Practicum (CLP) designed to: 1) help students understand course material in a deeper and longer-lasting way by having them integrate and apply theoretical principles from the science, practice and social and administrative science courses, 2) prepare students for their practice experiences, 3) collaborate and negotiate effectively, and 4) encourage students to become more accountable for their learning. Team-based learning cases will be used to give students the opportunity to draw upon the specific lessons from all courses in the preceding week. Case sequence is based upon the order of organ systems presented in the anatomy and physiology class. Cases will increase in complexity requiring students to assimilate and apply their knowledge across disciplines and adapt to real-world ambiguous situations. Performance on ability-based outcomes will be assessed through direct and indirect measures. Students’ knowledge and comprehension will be measured with the individualized readiness assessment tests (iRATs) at the beginning of each session. Assimilation and application of knowledge will be assessed with the group readiness assessment tests (gRATs) administered subsequent to the team-based discussions. Summative assessments including objective structured clinical examinations (OSCEs) for evaluating clinical skills development and peer evaluations that track progress on core values will be conducted twice a semester. Students’ performance in the CLP and their reflections on the course’s impact on their learning will be used in the continuous quality improvement of teaching. Findings of this process will be made available for peer review.

Fostering the Scholarship of Teaching and Learning at South Dakota State University. Jane R. Mort, South Dakota State University, Dennis D. Hedge, South Dakota State University, Michael D. Lemon, South Dakota State University, Chandradhar Dwivedi, South Dakota State University, James R. Clem, South Dakota State University. The College of Pharmacy at South Dakota State University is committed to the scholarship of teaching and learning (SOTL). In the area of teaching and learning, current faculty members report providing 19 presentations, eight articles, and eight abstracts. The College’s Assessment Plan has stimulated three-fourths of the College’s SOTL (74.3 percent). Specifically, the research component of the Assessment Plan, designed to evaluate instructional innovations, accounts for a large portion of SOTL activities (40 percent). South Dakota State University wholly endorses and supports SOTL as evidenced by its inclusion in the Office of Academic Affair’s strategic goals. Each college and department has been required to include SOTL in performance standards, thereby tying SOTL to promotion and tenure. In 2009, the University committed funds for SOTL research grants which are subsequently supporting two projects for faculty members in the College of Pharmacy. The University has also recently established a full time Director for the Teaching Learning Center who is responsible for fostering SOTL. Finally, the University has provided multiple faculty development activities on SOTL including summer academies and learning communities. In summary, the College has been successful in SOTL due in large part to the College’s Assessment Plan and the University’s support through inclusion of SOTL in promotion and tenure standards, grants, and faculty development.

Getting the Whole Picture: Triangulating Assessment Data to Ensure Curricular Integrity. Stefani Hines, The University of New Mexico, John A. Pieper, The University of New Mexico, Steven L. Peterson, The University of New Mexico. In any degree program, assessment and evaluation data are collected at both the student and program levels. At the program level, one goal of assessment and evaluation is supporting curricular integrity, meaning the competencies are being taught progressively (at the introduced, developed, and applied levels) at appropriate times in the curriculum. Documenting the implemented curriculum, as opposed to the intended curriculum, requires analysis from multiple viewpoints. This poster shares specific approaches that the College of Pharmacy at the University of New Mexico is triangulating data to determine whether alignment is occurring between the implemented curriculum and the college’s Doctor of Pharmacy competencies. The three approaches that are highlighted include a comprehensive annual student self-assessment survey, a rigorous course evaluation/review system, and the utilization of key, applied level assessments and student portfolio artifacts. The poster also highlights examples of curricular changes that were made as a result of these data.

Integration of Service Based Pharmacy Experiences into the Doctor of Pharmacy Curriculum in Rural Appalachia. Susan L. Mayhew, Appalachian College of Pharmacy. Consistent with the vision and mission of the Appalachian College of Pharmacy (ACP), service learning is a curricular requirement developed to introduce students to community service and outreach in rural medically underserved communities. The Pharmacists in Community Service (PICS) program was implemented with the College’s first entering class in August 2005. While the program has undergone refinement over the years, the core expectations remain requiring that each student complete 150 hours of community service prior to graduation from the three-year Doctor of Pharmacy program. At least 100 of those hours must be health-related service. Students complete a form to document and track each volunteer service rendered and reflective writing activities are used to assess professional development and motivation to serve. College sponsored service activities in which participation is required of all first and second-year students include two regional Remote Area Medical Events, an annual medication review and counseling session for seniors, and a newly introduced ACP annual health fair. Other service activities include Habitat for Humanity, Operation Christmas Shoebox, Food City Smoke Out and free health clinics. Service experiences provided through the PICS program foster student understanding of the unique health challenges...
facing people living in rural and medically underserved areas and enhance the clinical skills and judgment needed to serve those patients effectively. The PICS program also nurtures student commitment to life-long service and serves as a bridge to the advanced pharmacy practice experiences by exposing students to direct patient care early in the professional program.

**Integration of Simulation into Pharmacy Curriculum: The University of Findlay Experience.** Debra Parker, The University of Findlay, Laura Perry, The University of Findlay, Lori Ernshausen, The University of Findlay, John Stanovich, The University of Findlay, Kathy Crea, The University of Findlay. **Objectives:** The primary objective is to integrate the use of a simulation manikin (SimMan3G®) into a pharmacy school curriculum to better prepare students to practice in a challenging and constantly changing work environment. The use of simulation will provide practical application of didactic materials in a safe environment during their pharmacy education as well as provide real-time feedback related to performance. Students will be required to demonstrate knowledge and skills related to several competencies (including physical assessment as well as safe teamwork competencies); student attitudes related to teamwork competencies may also be assessed. Competencies will be assessed through observation and will be a graded event required to pass specific pharmacy courses, resulting in students being better prepared to perform in their experiential rotations and professional practice. Secondary objectives include assessing student perception of the usefulness of simulation manikins to enhance their didactic training prior to and following the use of simulation in the classroom, as well as assessing faculty perceptions regarding the importance of this type of training for their students. **Results:** Pending. **Implications:** Should faculty and student perceptions, and student performance, indicate enhanced teaching and learning, the use of simulation will expand into all required courses within the professional curriculum.

**Kids Eat Healthy: A Pharmacy Student Service Learning Program Providing Nutrition Education to Children.** Rebecca A. Felter, Lake Erie College of Osteopathic Medicine, Julie J. Wilkinson, Lake Erie College of Osteopathic Medicine, Sarah Popish, Touro University, Karla Pignotti Dumas, Food and Nutrition Services, Sarasota District Schools, Heather M. Petrelli, Lake Erie College of Osteopathic Medicine. **Background:** The prevalence of overweight children has tripled over the past 20 years in the US, with a higher occurrence in lower socioeconomic communities. Our program is a service learning course requirement incorporated into the second semester of a four-year Doctor of Pharmacy program. **Objective:** The program’s goals are to increase elementary student nutrition knowledge and to enhance pharmacy student communication skills and professionalism. **Methods:** A prospective educational intervention was delivered to grades K through 3 weekly for four weeks. Three lower socioeconomic schools were chosen to receive nutrition lessons developed by school system nutritionists. Pre and post tests were given to elementary students to evaluate their knowledge of basic nutrition information. Pharmacy students were given pre and post surveys to measure their perceived attitudes, skills, and knowledge achieved through the project. **Results:** A total of 468 elementary students completed the pre/post test, and 96 pharmacy students completed the pre/post survey. Statistically significant improvement was found in all grade levels for food group matching on the knowledge test. The pharmacy student survey showed greater than 90% of students rated achievement of specific objectives as strongly agree or agree. General professional skills were assessed, with “feeling a sense of community responsibility” and “taking responsibility as a healthcare provider” being the most highly rated. **Implications:** This service learning experience proved to be beneficial for both the elementary and pharmacy students. Enhancing the knowledge of both groups and establishing a positive relationship between the pharmacy school and the community.

**Lunar Cycle Effects: True or False.** E. Ben Welch, Southwestern Oklahoma State University, Chelsea Church, Southwestern Oklahoma State University, Erin D. Callen, Southwestern Oklahoma State University. **Objective:** To determine if the full moon has any effect on psychiatric admissions, 911 calls to a local police department, calls to a poison center, or birth deliveries. **Methods:** Retrospective look at number of 911 dispatched calls, poison control center calls, birth deliveries, admissions to a psychiatric hospital, and the increase use of psychotropic medications occurring on the day of the full moon for calendar years 2008 and 2009. Full moon dates were obtained from the Naval Observatory. **Results:** Our two year data does not support the perceived perception that the full moon has any influence on the areas we studied as compared to non-full moon days.

**Meeting the Need: A Multi-pronged Approach to Promoting the Scholarship of Assessment, Learning and Teaching.** Jeff J. Cain, University of Kentucky, Helen Garces, University of Kentucky, Frank Romanelli, University of Kentucky. **Objective:** To facilitate faculty development in the areas of teaching and scholarly excellence. **Methods:** The University of Kentucky College of Pharmacy’s Office of Education promotes and facilitates the scholarship of assessment, learning and teaching. This is accomplished through individual consultations by dedicated education/assessment specialists, an Education Scholarship Think Tank, a formal Teaching Toolkit series consisting of an array of teaching, learning, and assessment seminars, a student liaison program, and a Scholarship of Teaching and Learning Certificate Program. **Results:** During the 2009-2010 academic year, the Office of Education sponsored 8 Teaching Toolkits with total attendance surpassing 100. Seminars addressed a variety of topics including teaching with case vignettes, using blogs in the teaching/learning process, and addressing incivility in the classroom. Hands-on training for Blackboard® course management system and TurningPoint® audience response system were also offered. Forty-two pharmacy residents and faculty were enrolled in the Scholarship of Teaching and Learning Certificate Program, which consisted of 12 seminars and a mixture of learning activities. Education Scholarship Think Tank activities included discussions regarding scholarly publishing opportunities and roundtable discussions of faculty education research ideas. Finally, 7 student liaison committee meetings were held to garner formative feedback for respective course directors. **Implications:** The promotion of scholarly teaching, learning, and assessment requires concentrated efforts. Colleges and schools of pharmacy can facilitate scholarly educational efforts by providing dedicated personnel and various focused enrichment activities. Enriching current faculty skill sets and developing the next generation of teaching faculty are important tasks for the academy.

**Novel Hospital-based Mentor Model Integrated Longitudinally within the Introductory Pharmacy Practice Experience Curriculum.** Kristen Brown, University of Colorado Denver, Wesley A. Nuffer, University of Colorado Denver, Christopher J. Turner, University of Colorado Denver. **Objectives:** Establish a longitudinal mentored experience within the pharmacy curriculum that increases the quality and number of hospital visits conducted by students. Students’ learning would be enhanced by a greater awareness of and exposure to the hospital practice environment, provision of curricular
balance and the fostering of a mentor relationship. **Methods:** 160 P2 students are being individually matched with hospital pharmacists to experience 15 monthly visits over 4 semesters. Students will be continually exposed to hospital practice, increasing their patient-care responsibilities as they progress. **Results:** Preliminary reports from both P2 students and hospital mentors describe the model as positive and rewarding. In late Spring 2010 the 2nd and 3rd year classes will be surveyed regarding their hospital experiences. The P2 class will have completed 6-7 hospital visits by this time. Data collected will include comparisons of perceptions as to the value of the hospital experiences and the mentoring process, reflections on preparedness to enter advanced practice rotations and tracking of students’ competence and confidence to utilize hospital skills. Future follow-up would include tracking any increase in hospital/specialty APPE electives chosen as well as any increase in the number of students that pursue post-graduate training. Mentors would be surveyed for their feedback about the successes, barriers, benefits and satisfaction they had with the program. **Implications:** The longitudinal mentored experience should continue to enhance pharmacy students’ exposure to and awareness of the hospital pharmacy environment, strengthen connections with our hospital practitioner community and better prepare graduates for hospital careers or post-graduate opportunities.

**Ohio Northern University Raises Healthcare Awareness in the Community Through Outreach Efforts.** Kristen N. Finley, *Ohio Northern University.* Ohio Northern University (ONU) Raabe College of Pharmacy made it a top priority at the beginning of the 2009-10 year to inspire our students to make a difference and become involved with their community. One way to unite our students within our profession was to expand our outreach efforts amongst all pharmacy organizations. Groups were encouraged to expand upon or create a program that would promote not only health/wellness, but proper medication use and disease state education to the public. Program goals were to 1.) provide an opportunity for students to apply skills learned, 2.) collaborate with other healthcare professionals, and 3.) screen patients as well as educate them on their health conditions. Newly developed programs included stroke awareness/prevention, asthma/COPD education and inhaler use, and prescription drug awareness campaign to name a few. Screenings such as cholesterol, blood glucose, blood pressure, and osteoporosis (heel scan) expanded to include outreach events in local businesses, schools, churches, and indigent clinics. Student organizations also hosted several “health fairs” with large corporations to include a menu of health topics and free screenings. Thousands of patients were screened during this year with approximately hundreds of students volunteering. Regardless of the outreach efforts made, the purpose is the same: provide excellent healthcare in the best interest of the patient. Our students are learning to promote our profession by serving others and raising healthcare awareness in the community. ONU hopes to be an inspiration and model approach to educational outreach experiences for other colleges throughout the country.

**Optimizing a Skills Laboratory Course Series for Teaching, Learning and Assessment.** Michael W. Neville, *The University of Georgia,* Deborah L. Elder, *The University of Georgia,* Bradley G. Phillips, *The University of Georgia,* George E. Francisco, *The University of Georgia.* **Objectives:** Today’s pharmacists are increasingly being asked to provide patient care services, which require students to master key skills before graduation. Essential pharmacy skills are taught during the skills laboratory course series, and students gain proficiency by observation and application through introductory and advanced pharmacy practice experiences. Our objective was to determine how the six semester skills laboratory series should be structured and delivered to optimize teaching, learning and assessment. **Methods:** Skills laboratory space requirements, physical layout, technologies to facilitate teaching and assessments were evaluated. Faculty members (n=5) visited other schools to assess different teaching laboratories and attended conferences (n=4) on assessing student’s knowledge and skills. **Results:** A skills laboratory (5,623 sq. ft.) was built to optimize teaching, learning and assessment in various practice settings. Audio and video capabilities for synchronous and asynchronous evaluation and assessment were integrated into the laboratory. Students are taught and can demonstrate skills in person or remotely via faculty video connection. Students may critique their own recorded skill exercise; faculty members may also provide feedback and complete student assessments. Objective structured clinical examinations are included at the end of each semester over the three year skills laboratory course series. Practical examinations are administered at the end of each semester in the second year to assess extemporaneous compounding skills. **Implications:** Design and layout of physical space and integration of technologies have optimized teaching and learning in the skills laboratory course series and provide unique opportunities for assessing student’s pharmacy skills.

**Partnering with NABP to Assess a Dual Pathway Program.** Paul Turner, *Creighton University,* Michael S. Monaghan, *Creighton University,* Samuel C. Augustine, *Creighton University,* Jay Matthews-Lopez, NABP, Sandra Dolan, NABP, Maria Boyle, NABP. **Objective:** A valid means of directly measuring student performance longitudinally throughout a dual pathway program is needed to demonstrate comparability in educational outcomes. The Pharmacy Curriculum Outcomes Assessment (PCOA®) was designed to assess the overall effectiveness of a pharmacy program curriculum and provide a standardized and national outcome measure. Therefore, the PCOA® provides a direct measure of curricular effectiveness. The purpose of our program administering the PCOA® was threefold: to benchmark longitudinal assessment of student learning; increase reliability of our outcomes assessment through triangulation of measurements to assure comparability between a campus and distance pathway; and evaluate the efficacy of the PCOA® as a capstone/terminal high stakes assessment. **Methods:** The PCOA® was administered to a stratified random sample of P1 through P4 students from both pathways in 2009 and 2010. A criterion validation study triangulating the PCOA® with student admission data (e.g., PCAT scores), QPA, academic progression, and NAPLEX results was performed. **Results:** A comprehensive overview of the development, format, production, and uses of the PCOA® as they apply to the scholarship of assessment, learning and teaching (SALT) will be presented, along with reliability and validity results. How these data transfer to our site-specific criterion validation analysis will be presented. **Implications:** Data from this collaboration demonstrate how a valid and reliable instrument developed by the NABP can be used as a direct measure of pathway comparability in a comprehensive SALT approach to curricular assessment. Evidence for high stakes applicability will be presented.

**Pharmacotherapy Course Series Grading Rubric: Assessment of Utilization by Faculty.** Elizabeth A. Winans, *University of Missouri - Kansas City,* Maqual R. Graham, *University of Missouri - Kansas City,* Leigh Anne Nelson, *University of Missouri - Kansas City,* Linda S. Garavalia, *University of Missouri - Kansas City,* Roger Sommi, *University of Missouri - Kansas City,* Frank Caligiuri, *University of Missouri - Kansas City,* Steven C. Stoner, *University of Missouri - Kansas City.* **Objective:** A survey was developed to assess current
use of a grading rubric in a three-part pharmacotherapy series course. Survey items included: 1) Do faculty use the rubric when assessing student work? 2) Are points assigned according to the rubric? 3) How does the grader utilize the rubric? 4) Are points awarded or deducted when grading student work? 5) Why does the faculty use or not use the rubric? 6) If training were provided, would the faculty begin utilizing the rubric? Methods: The 10-item survey was developed and administered by the pharmacotherapy series work group and posted on SurveyMonkey. Twenty-nine faculty were invited to respond. Results are presented as response frequencies for each question. Results: All responders (N=17; 59% participation) indicated awareness of the rubric; however, only 14 respondents felt that the rubric should be utilized to assess student work. Eleven respondents felt the rubric provided grading consistency among instructors while one indicated s/he did not agree with the assessment process. Nearly 65% used the rubric as a guide and deviated when necessary; 29% used the rubric as it is written; 12% did not use the rubric. Implications: These data will allow the course coordinators to understand current utilization and identify opportunities to increase faculty utilization of the rubric. As a result of our study, the rubric will be modified and training for faculty will be enhanced. Greater fidelity to the rubric will enhance consistency in grading in this team taught course and may improve students’ perceptions of grading consistency.

Potential Determinants of First Year Pharmacy Student Success. George A. DeMaagd, Union University, Blake Watkins, Union University, David Kuhl, Union University, Joel S. Owen, Union University, Sean King, Union University, Kim M. Jones, Union University, Andrew Martin, Union University, Sheila Mitchell, University. Objective: We describe a School of Pharmacy Assessment Committee project which will evaluate potential determinants of success within our 2012 student cohort. An evaluation of pre-requisite data including the ACT exam scores, admission grade point averages, course specific grades and Pharmacy College Admission Test (PCAT) scores, including domain and composite scores will be conducted. Statistical correlations between these determinants and student first year curriculum success will be analyzed and shared with the School of Pharmacy Admissions Committee, Assessment Evaluation Committee, leadership and faculty. Methods: This study will be a retrospective analysis of our 2012 pharmacy student cohort pre-pharmacy prerequisite data. Data to be assessed will include grade point averages, specific course grades, ACT exam scores and Pharmacy College Admission Test (PCAT) scores. Analysis of this data will be conducted retrospectively and compared with first year summative assessment results, e.g. grades, from the first professional year. Regression analysis and analysis of variance will be performed for continuous predictors and discrete predictors respectively. Results: The results will be compiled over the next four months and shared with the School of Pharmacy Admissions Committee, Assessment Evaluation Committee, leadership and faculty. Implications: Potential benefits of this research include a better understanding of the relationship between pre-pharmacy data and first year pharmacy student performance. Understanding these relationships may guide the School of Pharmacy Admissions Committee in the development of an action plan, to modify or improve the overall admissions process and provide guidance in the selection of future student cohorts.

Promoting Faculty Enrichment in a Learner-Centered PharmD Program. Reza Karimi, Pacific University Oregon, Joseph K. Bonnarens, Pacific University Oregon, Kenneth C. Jackson, Pacific University Oregon, Susan M. Stein, Pacific University Oregon. Pacific University School of Pharmacy (School) is a learner-centered environment that promotes a culture of faculty enrichment in which faculty’s cooperative and collaborative learning, teaching, and assessment is encouraged and supported. Faculty, regardless of age, degree, and areas of expertise bring a set of talents and skills to schools of pharmacy. Although, these talents and skills are essential to programs’ effectiveness and achievements, they are not wholly utilized to improve the overall faculty enrichment process. We have developed a unique faculty enrichment model that actively involves and encourages faculty to participate in their own developmental activities. This model has triggered faculty’s intrinsic motivation to share their past and current experiences with their peers. This unique model reflects not only interdisciplinary collaborations but empowers faculty to make significant contributions to the School, encourages productivity, promotes intellectual and professional growth, and increases professional satisfaction and retention. Since the commencement of the School in 2006, we have organized twenty five faculty enrichment workshops to enhance faculty’s curricular, instructional, and scholarly skills. These workshops have been conducted in the areas of: instructional methods and assessments, orientation, test writing techniques, student advising, mentoring, tenure and promotion, student learning, curricular effectiveness, curricular mappings, research, and teaching presentation skills. The above faculty enrichment workshops have promoted faculty’s scholarly innovations which resulted in peer review publications and presentation of 25 professional posters in the annual AACP meetings and other national conferences. In addition, these workshops have assisted us in maintaining high and steady faculty retention rates.

Promoting SALT through Faculty Development Initiatives at the University of Cincinnati. Shauna M. Buring, University of Cincinnati, Bethanne Brown, University of Cincinnati, Karissa Kim, University of Cincinnati, Anne H. Metzger, University of Cincinnati. A series of faculty development initiatives including local workshops, team training, and individual development have contributed to and expanded on our understanding of the scholarship of assessment, learning, and teaching (SALT). Several years ago the College sponsored a college-wide half-day workshop on the scholarship of teaching and learning. Marie Chisholm-Burns presented and interactive session on the basic tenets SALT and how to incorporate this into a faculty member’s current scholarship plan. As the College approaches conversion to a semester system from a quarter system, we committed to evaluate the curriculum from all sides and consider teaching in progressive, integrative ways to truly enhance student learning and retention. As an introduction to this, a team of faculty attended the AACP Curricular Change Summit in 2009. More recently, faculty have become interested in the practice of team-based learning as a way to teach students about team development and collaborative learning. Both a half-day and full-day workshop were devoted to further exploring this pedagogical approach. In a year long experience, a College of Pharmacy faculty member along with faculty from other disciplines redesigned an interprofessional course following good teaching practices. Most recently, a workshop on generational diversity of our students, preceptors, and faculty was presented to share information about the similarities and differences among us and how to best work with those differences.
Ryan, Mercer University. The Center for the Advancement of Teaching and Learning (CATAL) was created within the College in 2001. The purpose of CATAL is to support and promote effective and innovative teaching that enhances learning. CATAL promotes SALT in a number of ways. The Center administers the Teaching and Learning Development Grant Program. The aim of the Program is to promote SALT by making funds available for faculty to develop innovative pedagogical projects to enhance teaching, to promote a teaching community at the College, and to improve student learning. To help ensure that the work of the faculty is available for the community to review and assess, a quarterly newsletter entitled Let’s Think About It! is published. These articles describe what works in the classroom/practice site and methods of assessment of student learning. A Quarterly Teaching and Learning Colloquy is designed as a way to create a supportive climate for those concerned with SALT. In colloquies, faculty collaborate to exchange ideas, methods, and resources on teaching and learning. Major goals of the Colloquy are to support, promote and share the excitement and satisfaction of teaching and learning; to reflect and learn about ourselves as educators; and to inspire others and ourselves. The College Distinguished Educator Award is promoted by CATAL as a means of recognizing SALT. Award recipients are recommended to the Dean by the Center. Additional CATAL services to faculty include assistance with assessment of teaching skills; suggestions for developing methods and approaches to teaching; development of teaching portfolios; and strategic mentoring.

RCOP Faculty Development Programs: Fostering Communication and Learning, Barry Bleidt, Texas A&M Health Science Center, Srikanth Kolluru, Texas A&M Health Science Center, Rajat Sethi, Texas A&M Health Science Center, Mohammad T. Nutan, Texas A&M Health Science Center, Kristopher G. Virga, Texas A&M Health Science Center, James Robertson, Texas A&M Health Science Center, Joseph Rinka, Texas A&M Health Science Center, Darren Roesch, Texas A&M Health Science Center, Juan Castro, Texas A&M Health Science Center, Delwar Hussain, Texas A&M Health Science Center, David Matthews, Texas A&M Health Science Center, Indra K. Reddy, Texas A&M Health Science Center. The Texas A&M Health Science Center Irma Lerma Rangel College of Pharmacy (HSC-COP) has funded faculty and staff development in excess of $190,000 for the three most recent fiscal years. The Office of Academic Affairs and the Faculty Development Committee have conceived and implemented different types of developmental seminars, both separately and jointly. The purposes of these sessions are to foster a Culture of Assessment, introduce new teaching technologies and techniques to the faculty, encourage discussion on the role of Introductory Pharmacy Practice Experiences (IPPEs) in the curriculum, and promote discussion of topics of interest. Two unique types of activities employed by the HSC-COP are the Experiential and Technology Forums. In Experiential Forums, students present their experiences in the IPPE courses and how these patient interactions relate to material learned in didactic courses. The Technology Forums give both faculty and students the opportunity to present and discuss the different technologies they use to enhance their teaching and learning, respectively. This poster will describe the different types of faculty development workshops offered by the Rangel College of Pharmacy and their relation to the Scholarship of Assessment, Learning, and Teaching.

SALT Test? Using Glassock’s Standards and SALT Criteria to Rate Teaching and Admissions Activities, Jean T. Carter, The University of Montana, Lori J. Morin, The University of Montana, Gayle A. Hudgins, The University of Montana, Lisa V. Wrobel, The University of Montana. Objective: Determine how well a sample of activities meet the Glassock standards and SALT criteria. Methods: Several activities in assessment, teaching, and admissions have been selected for review to determine how well they meet the SALT criteria and Glassock et al.’s six standards for scholarly activity. These include the interview process used for admissions since success of students in the program and profession depends in part on the students selected. Multiple methods of assessment have been used to evaluate and refine the process to its current form. More recently, an audience response system has been introduced into several courses which provides another perfect opportunity to evaluate how this tool impacts teaching methods, student learning, assessments, and attendance. The program is also implementing an electronic experiential management system, including student portfolios and APPE evaluations. Although it may be too early to determine the impact this system will have on student learning and assessment, we will still try rating it. All of these activities will be evaluated on the basis of their goal clarity, preparation adequacy, method appropriateness, results, effectiveness of results presentations, and reflective critiques. Results & Implications: The results of the review will be revealed in the school poster along with information about the activities reviewed, assessment tools and methods used, and potential revisions based on our findings.

SALT and PePPeR: An Integrated Commitment to the Scholarship of Assessment, Learning and Teaching, Alicia S. Bouldin, The University of Mississippi, Barbara G. Wells, The University of Mississippi. The scholarship of assessment, learning and teaching (SALT) has many expressions within an academic community, and affects the practices and outcomes of members of that community at all levels: student, teacher, staff. At the University of Mississippi School of Pharmacy, a variety of means are used to facilitate this form of scholarship, through promotion of awareness of the concept, preparation through professional development in this area, production of data useful for continuous quality improvement in teaching and learning, and rewarding best practices among members of the community. “Promote, Prepare, Produce, and Reward” = PPRR, an integrated formula for facilitation of success. Virtually all initiatives in this effort are student- or faculty-driven, even if sponsored by the Dean’s Office. Examples of integrated initiatives include strategic planning, programmatic evaluation, curricular revisions, departmental teaching portfolio workshops, teaching assistant development and training, and school-wide awards for teaching excellence and distinguished teaching scholarship. Outcomes of assessment projects related to teaching, learning, and professional development are encouraged to be shared, both within the community and externally. Several recent presentations and publications attest to the willingness of this faculty to examine its practice and solicit feedback for improvement. While no concentrated push in one given area of SALT has been a focus thus far at this institution, the breadth of exposure and effort has allowed for growth and development of SALT at a steady pace, and has enabled a near-seamless integration with other responsibilities and activities of the community.

School-wide Curricular Efforts: Curricular Mapping for Assessment and Accreditation, Elizabeth A. Sheaffer, Shenandoah University. Curricular mapping is a process that is both beneficial and necessary to meet assessment and ACPE accreditation requirements. Mapping enables inspection of connections between outcomes or objectives and content and evaluation. Shenandoah University Bernard J. Dunn School of Pharmacy is now in its second year of mapping its
curriculum. Managed by the Academic Affairs Committee, the process involves faculty, staff, and students and is being conducted year-by-year, beginning with the first entering class that included the full IPPE curriculum (fall 2008). The initial ‘map’ is expected to be complete in 2012. The mapping process shows coverage gaps, coverage repetition, and absent or unclear links between content and objectives. Various levels (course, program, etc.) and data types can be included in curricular mapping. Some of the data types included by Shenandoah University include objectives or outcomes, institutional methods, content hours, skill levels, intended coverage, and learned coverage, as assessed by students. Because the mapping process began before adoption and implementation of institutional assessment software, a beneficial step in the process was the development of a tool for collecting data and automating analysis. The poster will discuss the mapping process, show the analysis tools developed using standard desktop software, provide findings, and discuss the use of the findings. Sample data will be included to demonstrate the improvement opportunities provided by curricular mapping.

School-wide Curricular Efforts to Enhance Teaching Scholarship. Diane W Morel, Philadelphia College of Pharmacy, Lauren K. McCluggage, University of the Sciences in Philadelphia, Cathy Y. Poon, University of the Sciences in Philadelphia, Laura A. Mandos, University of the Sciences in Philadelphia. Enhancement of the variety of teaching methods utilized by faculty and promulgation of teaching scholarship within the Philadelphia College of Pharmacy has been approached by faculty and administration using a variety of measures including: a faculty development plan for the Department of Pharmacy Practice and Pharmacy Administration (DOPP/PA) that includes teaching and learning methodologies; a workshop on active learning techniques at a required college-wide retreat, highlighting approaches of both senior and junior faculty in large classes; inventories of faculty-reported application of these techniques in required courses as a “snapshot” quantification of both time spent and types of activities being used; faculty-driven elaboration of a shared, college-wide, comprehensive educational philosophy, with an emphasis on active learning; and formation of a college-wide assessment committee to develop the structure of a program to evaluate teaching effectiveness. A third of the faculty in DOPP/PA have completed training at the ACCP Academy, including virtually all new hires since 2006. Scholarship of teaching has been disseminated regionally and nationally: a junior faculty member won a university teaching and scholarly productivity award for use of a jigsaw exercise in a class of over 250 students; posters focusing on active learning in the professional curriculum have been accepted for presentation at regional, national and international national teaching conferences. The active learning inventory indicated a significant time spent in active learning (30-80%), depending on class size) in professional courses. Examples of these activities and associated assessments will be presented to highlight the College’s commitment to enhancing the scholarship of teaching.

Shared Faculty Memorandum of Understanding between Intermountain Medical Center and the University of Southern Nevada. Darla Zarley, University of Southern Nevada, Renee E. Coffman, University of Southern Nevada, Nannette Berensen, Intermountain Medical Center, Bruce Leavitt, Intermountain Medical Center. Objective: To create a system that facilitates success and sustainability for shared faculty positions between Intermountain Medical Center Department of Pharmacy Services (IMC), the University of Southern Nevada College of Pharmacy (USNCOP), and faculty practitioners. Methods: IMC and USNCOP have developed a memorandum of understanding (MOU) system to facilitate the success of faculty practitioners in their practice and faculty roles. A MOU has been developed for each faculty practitioner. The MOU is tailored to the individual practitioner based on their level of experience and practice area. Each MOU clearly outlines the expectations of IMC and USNCOP for a faculty practitioner. Results: Leaders from IMC, USNCOP, and the practitioners meet on a quarterly basis to review the MOU and to address any concerns. The quarterly meetings have been instrumental in maintaining the intent of the MOU and in ensuring that all parties’ needs are met. The quarterly meetings also provide insight regarding what changes need to be incorporated into the next MOU. Implications: The MOU system has been an effective tool for guiding faculty practitioners’ efforts and for ensuring that the service and academic needs of IMC and USNCOP are met. The MOU system has been successful in facilitating positive and sustainable relationships between IMC, USNCOP, and the faculty practitioners. In addition, the MOU system has ensured appropriate expectations for the faculty practitioners given the competing interests. The MOU system has also been effective in ensuring that faculty practitioners’ clearly understand what is expected.

Strengthening the Research Culture at St. Louis College of Pharmacy. Wendy Duncan, St. Louis College of Pharmacy, Peter D. Hurd, St. Louis College of Pharmacy, Tricia M. Berry, St. Louis College of Pharmacy, Amy M. Tienmeier, St. Louis College of Pharmacy, Chaya Gopalan, St. Louis College of Pharmacy, Terry L. Seaton, St. Louis College of Pharmacy, Zachary A. Stacy, St. Louis College of Pharmacy, Sheldon G. Holstad, St. Louis College of Pharmacy. Objective: We sought to strengthen the research commitment of the College community, using approaches that focused on students and faculty. Methods: In 2008 the College took steps to increase research and scholarly productivity. Efforts included development of a research strategic plan, a Research and Scholarly Activity Committee (RSAC), faculty support, increased Institutional Research Board (IRB) efforts, and attempts to increase student research interests. Results: The research strategic plan emphasized initiating research and scholarly activities. The RSAC sponsored a research speakers series, funded faculty research projects, and supported a Student Research Symposium that highlighted 25 student projects and was well-received by students, faculty, and parents. Fourteen students have participated in the Clinical Research Training Center Predoctoral Program at Washington University (TL1 CRTC) and a faculty member is currently in the CRTC postdoctoral program. A clinical research development workshop series in Pharmacy Practice and a College-wide research skills series were provided to faculty. Three research interest groups were formed: patient centered practice and policy, teaching and learning, and gerontology. Projects have been funded from both intramural and competitive external sources. The IRB has heightened awareness of faculty/student researchers and mandated training for researchers. A student survey indicated a broad range of student interests, including public health and academic disciplines in addition to pharmacy. Implications: A teaching-focused pharmacy college can make significant increases in the dedication of faculty and students to research and other scholarly activities. Sustaining and growing this change in culture will be one of the next challenges.

Student-Generated, Case-Based Multiple Choice Questions: Assessment of a Student/Faculty Collaborative Effort. Anne-Marie M. Schullo-Feulner, University of Minnesota, Kristin K. Janke, University of Minnesota, Scott Chapman, University of Minnesota, Megan R. Undeberg, University of Minnesota, Richard W. Brown, University of Minnesota, Charles T. Taylor, University of Minnesota,
Supporting Active Learning in Teams: Using Team-Based Learning (TBL) to Deliver an Integrated Pharmacy Curriculum. Stephen W. Luckey, Regis University, Michael H. Nelson, Regis University, Allana J. Sucher, Regis University, Brandon J. Sucher, Regis University, Rebecca D. Moote, Regis University, David R. Clark, Regis University, Stewart D. Allison, Regis University, Marianne McCollum, Regis University, Susan M. Paulsen, Regis University. Regis University School of Pharmacy (RUSOP) matriculated its inaugural class in fall 2009. During program development, RUSOP faculty identified educational outcomes designed to develop pharmacists who are knowledgeable, skillful, and principled. After review of active and collaborative instructional strategies, faculty chose team-based learning (TBL) to meet these outcomes. TBL creates a classroom environment where students are held accountable both as individuals and as teams for acquiring a basic understanding of content and concepts before each instructional unit is covered in the classroom. Students then participate in group activities designed to integrate and apply information. Within approximately four weeks, groups evolve into cooperative, high-functioning teams. Participation in these teams enhances problem-solving, critical thinking, communication, and team-work skills. To facilitate content delivery, both new and experienced faculty members participate in TBL development workshops. A highly integrated curriculum was developed using curricular mapping in order to maximize relevance and timeliness of content coverage, blending biomedical, pharmaceutical, and clinical sciences into disease-state units. Students are assessed independently through individual readiness assessment tests (RATs), exams, and peer assessment. Teams are assessed through team RATs and application exercises. After the first semester, 52 of 53 RUSOP students met both individual and team competency levels required for progression. Student evaluations have indicated support of TBL and the integrated curriculum philosophy. At the end of this school year, RUSOP will assess early experiential preceptor evaluations, student competency levels, and comparable data from inaugural pharmacy schools in order to evaluate the program, including the use of TBL.

Survey of Active Learning Processes Used in US Colleges of Pharmacy. David W. Stewart, East Tennessee State University, Stacy Brown, East Tennessee State University, Cheri W. Clavier, East Tennessee State University. Background: Active learning is an important part of pharmacy education and is looked upon favorably by the Accreditation Council for Pharmacy Education (ACPE). Active learning is a broad term that encompasses numerous different techniques, including inquiry/discovery learning, problem-, case-, and team-based methods, interactive/web, and patient simulation. The American Association of Colleges of Pharmacy (AACP) is currently proposing sweeping curricular revisions in pharmacy education, part of which would include investing in more active learning during the first three professional years of the pharmacy curriculum. Objective: To determine the extent of active learning in US pharmacy curricula. Methods: A survey will be conducted of faculty, administrative personnel, and librarians at all US colleges of pharmacy using an online tool to determine the various types of active learning strategies employed, in what courses they are used, and to what extent. These data, along with pertinent demographic and institutional information, will then be used to benchmark the national standard of active learning currently ongoing within US colleges of pharmacy, and will assist the Gatton College of Pharmacy as it moves forward in curricular development. Descriptive statistics will be used to analyze data. Results: Data collection and analysis is pending but will be completed by June 2010. Implications: These data may serve as a benchmark for new or established colleges or schools of pharmacy to compare the types and amounts of active learning strategies utilized in their curricula.

The Development of a SOAP Note Assessment and Feedback Form (SNAFF). Colleen A. Catalano, University of Washington, Skye A. McKennon, University of Washington, Elyse A. Tung, University of Washington. As pharmacy practice continues to expand into a variety of clinical settings, it has become apparent that future pharmacists must be able to document clinical interventions and recommendations to other healthcare providers. To prepare students for this task, patient cases are used in the Applied Pharmacotherapeutics course series at the University of Washington to replicate a variety of clinical situations. Students are required to communicate their assessment and individualized pharmacotherapeutic plans in the format of a traditional SOAP note. In an effort to provide the most beneficial and consistent feedback to students, the Soap Note Assessment and Feedback Form (SNAFF) was developed by the authors. The SNAFF was developed to 1) standardize grading, 2) clarify student expectations of essential information required in a SOAP note, 3) provide consistent evaluation and feedback to the students regarding assessing a patient case and applying critical thinking skills, and 4) develop and refine the skills required to compose a SOAP note. In this poster we present the SNAFF and our proposed plan to evaluate the effectiveness of this tool. We aim to report the experiences of the SNAFF during the third year core therapeutics course series following the use of this tool this academic year (2009-2010). We are currently developing a protocol to evaluate the success of this tool. Future work includes evaluating the pass rates and success of student SOAP notes across sections of the skills course that have been graded by multiple instructors.
Use of Assessment Data to Drive Curricular Change. Tina Zerilli, Long Island University, Harold L. Kirschenbaum, Long Island University. Objective: To use results obtained from assessment measures to drive curricular reform. Methods: A comprehensive assessment plan that includes the use of student focus groups, student/faculty/ alumni/preceptor surveys, OSCEs, in-depth course reviews, and standardized examinations was implemented in September 2007. The goal of the plan is to allow for a better informed decision-making environment for purposes of improving teaching and learning, allocating instructional resources, and reforming the curriculum. All members of the faculty participate in the process. Results: Assessments identified several items that needed to be addressed. For example, student focus groups and a comprehensive course review revealed curricular issues in one specific course within pharmaceutical sciences. OSCEs indicated that students require assistance in further developing their patient counseling skills, identifying errors of commission/omission on dispensed prescriptions, and reviewing patient profiles for potential medication-related problems. Also, PCOA scores were suboptimal. Each of these issues was addressed with one or more strategies. For instance, use of the Integrated Pharmaceutical Care Laboratory was increased in several courses, the assessment rubric used in the communications course was changed, and standardized examinations were implemented. Additionally, P-3 students whose overall PCOA composite score is a certain percentage below the national mean must undergo remediation and pass a competency examination prior to APPEs. Implications: Curricular assessment can drive curricular change within an existing curriculum. On-going assessment will determine whether the strategies were successful. Data obtained from assessments are also being considered as the College embarks on developing a new curriculum.

Use of OSCE to Evaluate the Curriculum and Student Learning. Flora Estes, Texas Southern University, Adlia Ebeid, Texas Southern University, Barbara E. Hayes, Texas Southern University, Kimberly Pounds, Texas Southern University, Lance F. Henderson, Texas Southern University. Objective: The objective of this project was to evaluate teaching and student learning in the areas of communications, counseling, and physical assessment. Methods: In spring semester 2010, an Objective Structured Clinical Exam (OSCE) was administered to 103 first professional year students to assess the effectiveness of curricular changes in developing students’ communications, counseling, and physical assessment skills. Rubrics were developed to measure each student’s level of proficiency in these areas. Students conducted physical assessments and counseled mock patients using randomly selected case studies that focused on four specific medications. Results: The overall pass rate was 89.3%. Students scored an average of 47.4 points out of a maximum of 58 points in patient counseling and communications. The average score for physical assessment was of 37.2 points out of a maximum of 42 points. Implications: Prior to the implementation of the new curriculum, the college conducted an OSCE to assess fourth professional year students’ skills and knowledge in physical assessment, drug information, and medication therapy management. Results indicated that 55% of the 105 P4 students completing the examination showed some weaknesses in physical assessment skills. The curriculum has been redesigned to introduce and reinforce communications and counseling and physical assessment earlier and throughout the curriculum. The results of the P1 OSCE suggest that revising the didactic curriculum to expose students to these areas during the students’ first professional year along with reinforcement through introductory pharmacy practice experiences will be beneficial to students as they progress through the program.

Use of an E-Portfolio System to Assess Student Perception of Curricular Outcome Achievement. Terri M. Wensel, Samford University, Michael G. Kendrach, Samford University, Mary R. Monk-Tutor, Samford University, Michael D. Hogue, Samford University, Patricia B. Naro, Samford University, Mary Worthington, Samford University, Rachel Slaton, Samford University, Chris Chapleau, Samford University, Ashley Hasbrouck, Samford University. Objectives: Describe the process of utilizing an e-portfolio system to assess achievement of curricular outcomes and present preliminary data concerning student attitudes and perceptions of the e-portfolio system. Background: Implemented in fall 2009, the e-portfolio tracks didactic course work, activities and requirements for introductory and advanced pharmacy practice experiences (IPPEs and APPEs, respectively), and student self-assessment of improvement over time. Goals of the portfolio are to document and measure curricular outcomes, the school’s ability-based outcomes (ABOs), and global course learning objectives (GLOs) in a newly implemented integrated curriculum. Methods: Baseline assessment of the e-portfolio utilized one-minute papers for feedback. Going forward, students will be surveyed at the end of each spring semester. The survey will use a Likert scale to rate student responses and will incorporate questions from existing assessment tools. Data will be analyzed using descriptive statistics. Results: The baseline assessment indicated professional year 1 students viewed the portfolio as a method to document personal growth throughout the curriculum, plus easily organize and document significant achievements and activities completed while a student. Students also expressed concern regarding logistics and benefit of the portfolio upon graduation. Upcoming assessments will address if GLOs helped students identify course expectations, relate basic science material to IPPE activities, integration of course content, and the organization and implementation of the e-portfolio system. Implications: Student
feedback regarding portfolio use and portfolio content will be valuable in aiding the school to assess the integration of the curriculum and if all outcomes are covered in the curriculum.

Using Academic Centers to Enhance the Scholarship of Learning (Emphasizing Effective Teaching and Assessment Strategies). Sian Carr-Lopez, University of the Pacific, Jace Hargis, University of the Pacific, Craig R. Seal, University of the Pacific, Nancy DeGuire, University of the Pacific, Suzanne M. Galal, University of the Pacific, Eric G. Boyce, University of the Pacific. Pharmacy faculty at the University of the Pacific’s Thomas J. Long School of Pharmacy and Health Sciences have enhanced their scholarship of learning capacity through interactions with two University centers of excellence: the Faculty Center for Teaching and Learning (CTL) and the Center for Social and Emotional Competence (CSEC). The CTL provides services and resources for all university faculty including new faculty orientation, individualized assessment and training, one-on-one mentoring, group workshops, collaborative forums and other support systems to assist faculty in becoming more effective teachers and scholars. In particular the CTL focuses on how to engage students in active learning and critical thinking as well as guide faculty in the scholarship of teaching and learning. New and established pharmacy faculty have developed collaborative research projects and research programs on the scholarship of learning with assistance from the CTL. The CSEC provides strategic direction for Pacific in social and emotional competence (SEC) development, with a goal of becoming the national leader in whole student learning. The CSEC has developed a unique model and measure of student SEC, has launched a university wide assessment strategy, and is developing teaching and learning modules to assist faculty and staff with implementing SEC development. In the Doctor of Pharmacy program, all first and second year students have completed the self-assessments and the data is being utilized to inform outcome assessment research as well as changes to teaching and learning strategies for faculty.

Visual Mapping of Pharmacy Curricular Competencies. Daniel H. Atchley, Harding University, Forrest L. Smith, Harding University, Susan M. Grace, Harding University, G. Scott Weston, Harding University, Janet Liles, Arkansas State University - Searcy, Julie A. Hixson-Wallace, Harding University. Objective: Harding University College of Pharmacy (HUCOP) developed and implemented a visual mapping tool to measure professional competencies addressed in the curriculum. Method: A table of professional competencies was developed incorporating 2004 CAPE (Center for the Advancement of Pharmaceutical Education) Educational Outcomes, CAPE Educational Outcomes Supplements, and NAPLEX (North American Pharmacist Licensure Examination) Competency Statements into a core mapping document. Next, all core pharmacy courses were prospectively mapped by course coordinators using this document, and a semi-quantitative scale for each competency. The semi-quantitative scale is effort based, and includes three levels: I - introduce; F - focus; and R - reinforce. Lastly, a map was constructed that rolled all professional outcomes in all core courses into a visual summary document, with graphical icons representing the IFR levels of effort. Results: The map provided sufficient detail to determine each course’s contribution to meeting the curricular competencies. Several graphical views enabled detailed interrogations of each course’s contribution to all competencies, and a single page executive snapshot of the impact of all courses to large groups of competencies. Potential gaps and redundancies were identified and are being addressed by the HUCOP Assessment and Curriculum committees. Implications: The visual mapping effort and observations to date provide important information needed during the rollout of our curriculum. Efforts are underway to verify the validity of the prospective mapping effort by having faculty re-accomplish mapping after each course is taught once. The effort will be expanded to connect artifacts to document that curricular competencies have been met.

What is the Science Foundation Needed for Pharmacists of the Future? Mitra Assemi, University of California, San Francisco, Barbara Sauer, University of California, San Francisco, Sharon L. Youmans, University of California, San Francisco, Leslie Floren, University of California, San Francisco. Objective: Our primary obligation as educators is to provide students with the tools needed to become effective and versatile practitioners. To do this we must devise, implement, and continually re-assess a forward-thinking curriculum - one that is solid in traditional sciences, yet incorporates emerging scientific and technological trends. Methods: We employed an evidence-based process for expansion of the UCSF School of Pharmacy PharmD curriculum science foundation beyond typical courses (e.g., pharmaceutical chemistry, biopharmaceutics, pharmacokinetics, pharmacogenomics, pharmacology) in order to provide substantive course content in innovative areas such as bioengineering and computational biology. Results: Rethinking the science foundation of the PharmD curriculum occurred in tandem with formation of a new Department of Bioengineering and Therapeutic Sciences (BTS), a joint department of the UCSF Schools of Pharmacy and Medicine. This synergistic relationship initially led to revision of two core courses taught by faculty in BTS. The Drug Delivery course was broadened to include bioengineering principles as they relate to delivery of medicines, biomaterials, medical devices/implants, and diagnostic technologies, and their application to clinical practice. The Bioinformatics course maintains a focus on access and use of electronic references while encompassing an additional emphasis on computational biology, including structure-based molecular modeling, access/use of genomics-related databases and interpretation of genomics data. Implications: The BTS collaboration holds great promise for the development of other novel approaches to the science training of our PharmD students, which is critical to the advancement of our profession.

Win-win: Developing Partnerships to Leverage Global Health Education and Activity. Eric H. Hobson, Belmont University, Philip E. Johnston, Belmont University, Mark J. Chirico, Belmont University. Objective: Belmont University School of Pharmacy (BUSOP) commits to meeting the health care needs of under-served populations locally and globally, and to reducing endemic health disparities through training pharmacists to practice in diverse settings with needed skill sets, and through care delivery activity. This dual commitment requires curricular and experiential capacity building. Principles of community engagement, social justice, and project sustainability guide our program development. Methods: These foci lead us into partnerships with global health-focused NGOs in the greater Nashville area; these partnerships reduce duplication of effort, celebrate each organization’s skills/mission niche, reflect wise resource stewardship, and open doors for otherwise unanticipated opportunity. What began as informal discussions have evolved over two years into formal relationships (Memoranda of Understanding, Affiliation Agreements, etc.). Results: These relationships meet both partner organization’s needs: BUSOP gains access to global health/medical missions expertise, elective course ideas, IPPE & APPE sites, global health service opportunities (at home and abroad), scholarship opportunities, and access to potential
benefactors. Our global health partners gain access to our practice, research and education expertise, to a cadre of faculty and student volunteers, interns, and medical mission trip participants, and to other outlets to have their organization’s story told. Both partners realize activity that aligns with their core mission and values. Implications: We share our partnership development process, current outcomes, and projected initiatives as one example of how academic pharmacy can model good global citizenship by affecting the state of health care around the world while meeting pragmatic program development needs.

“One-Stop Shopping” for Experiential Pre-requisites. Amie L. Smith, The University of Toledo, Jessica J. Shimman, The University of Toledo, Kristin Kameza, University of Toledo, Renee Niese, The University of Toledo. Background: In order to meet the experiential standards mandated by the Accreditation Council for Pharmacy Education (ACPE), students need to begin earning their Introductory Pharmacy Practice Experience (IPPE) hours during the first semester of the P1 year. In order to begin their hours, students need to meet various pre-requisites, including health requirements, background checks, intern licenses, and various University requirements. In the past, we have had greater than 10% of the class fail to meet the pre-requisites, leading to delays in beginning their experiential hours. Consequences of these delays can include some form of remediation or falling out of sync, leading to delayed graduation.

Objective: In order to help students meet the pre-requisite requirements on time, we plan to implement “PharmD Day.” Methods: “PharmD Day” will provide opportunities for students to meet all pre-requisites on one day, through collaboration with College of Pharmacy faculty, University-wide staff, nursing, International Student Services and local law enforcement. Results: Outcomes will be measured by comparing pre- and post-“PharmD Day” pre-requisite completion rates. Implications: “PharmD Day” should decrease the number of students who must remediate or fall out of sync because of failing to meet the pre-requisite requirements. In turn, students will stay on track with the College of Pharmacy’s curricular requirements.

INNOVATIONS IN TEACHING

Winners

The Pharmacy Curricula Vidcasting Project. Seena L. Haines, Palm Beach Atlantic University, Jenny A. Van Amburgh, Northeastern University. This vidcasting project was collaborative between two private Universities in two distinct courses. The project spanned a semester (16-weeks) in the Fall (2008 and 2009) of the third professional year in the disease prevention and health promotion course at Palm Beach Atlantic University (PBAU) and the Spring of the second professional year in the self care therapeutics course at Northeastern University School of Pharmacy (NU-SOP). Components of this assignment include: developing a treatment, storyboard, electronic documentation log, filming, editing, presentation with debriefing, rubric-based assessment, and peer/student evaluations. Equipment necessary for filming was provided by our respective media departments. The course concluded with an awards ceremony honoring superlative recipients and the top three YouTube released on the public domain and internal PBAU/NU-SOP web pages, TV stations, and the Palm Beach County digital square. Formative and summative assessments were implemented to evaluate student and community reactions, peer assessment, visibility and ratings by internet users, attribution of usage by other organizations. This process can be adapted to any course in any professional year and numerous health curricula as well as serve as an ideal project within an interdisciplinary course. Results indicate increased student self-esteem, respect for peers, creative and critical thinking abilities.

Learning Bridge: An Integrative Tool that Bridges Didactic and Experiential Curricula to Positively Affect Student Learning, Preceptor Training, and Faculty Teamwork. Reza Karimi, Pacific University, Pauline Cawley, Pacific University, Cassandra Arendt, Pacific University. A Learning Bridge (LB) has been developed to assist the School of Pharmacy’s first professional year (P1) students in integrating P1 didactic learning with introductory pharmacy practice experiences (IPPE). Thirteen LB assignments were designed based on biomedical, pharmaceutical, and social/behavioral/administrative sciences during the 2008-2009 academic year. These assignments were pharmacy related and designed to be completed at a pharmacy site, requiring students to be self-directed and use site-accessible tools to answer questions relating to the didactic materials covered concurrently within the P1 year. Each assignment was shared with students and preceptors prior to biweekly IPPE days. At the conclusion of fall and spring semesters we conducted five surveys to collect students’, preceptors’, and faculty’s feedback to measure the effectiveness of the LB process. Our results provided compelling evidence that the LB process played an instrumental role in promoting students’ interaction with their preceptors, active learning, self-directed learning and critical-thinking skills. In addition, preceptors believed that the LB process familiarized them with our P1 curriculum and assisted them in invigorating their knowledge of the curricular topics. Furthermore, faculty believed the dynamic of their teamwork was increased by generating LB assignments. Our results indicate that the LB process integrates didactic and experiential realms, and the results were sufficiently encouraging to incorporate the LB process into our PharmD curriculum.

Defining a Learning Process for Strengths Education in Pharmacy: An Eight Year Journey. Kristin K. Janke, University of Minnesota, Andrew P. Traynor, Concordia University, Wisconsin, Todd D. Sorensen, University of Minnesota. Research has shown that a high level of engagement in work is critical for creating innovation and success within an organization. Gallup has linked this type of engagement to an alignment between an individual’s talents and strengths and the work they do each day. The StrengthsFinder assessment tool was developed to assist individuals describe their talents and define their unique areas of strength. For pharmacy to achieve its potential in serving patients and society, the individual strengths of each pharmacist must be identified and engaged. To this end, we have developed a learning framework comprised of three competency levels defined across 5-stages of content. This has been applied to audiences ranging from student pharmacists, pharmacy residents and mid-career pharmacists. Nearly 600 individuals have completed the StrengthsFinder assessment and participated in programs that assist in translating general principles into a pharmacy context. Evaluations have demonstrated an enhanced understanding of personal strengths and an ability to identify areas for personal development. Eighty-three percent of student participants have indicated that this material has helped them become more aware of what will bring them professional satisfaction in their career. Ninety percent of pharmacists participating in a leadership development program indicated that they have applied the strengths material at their place of work. Success achieved to-date is supporting integration of a “strengths” curricular thread which will engage all student
The students stated they either agreed or strongly agreed with the statement (n=65). This program was funded by the Walgreen’s Diversity Grant.

EXCELLENCE IN ASSESSMENT

Winners

Moving from Black and White to Shades of Gray: Using Introductory Pharmacy Practice Experience (IPPE) Activities to Facilitate Student Transition from Primarily Science-based to Clinically-based Pharmacy Curricula. Pauline Cawley, Pacific University Oregon, Reza Karimi, Pacific University Oregon, Kristine Marcus, Pacific University Oregon. Objectives: To assess the impact of redesigning the IPPE provided at the beginning of our second year (IPPE2). Our assessment goals were to: i) explore if this approach assisted students in the transition from a primarily science-based first year to the more clinically-based second year of the program; ii) examine student, preceptor, and faculty impact, and iii) identify any areas of the curriculum that could be improved upon to enhance students’ skill level and confidence when entering the experiential and therapeutics arenas. Methods: IPPE2 was redesigned to provide four weeks of learning activities in community practice, and two-weeks of independent study simulating health-system pharmacy experiences. Assignments included patent case assignments, simulated medical charts and orders and calculations. Student support was facilitated using online discussion boards. Assessment activities included student reflections and survey data, and preceptor/faculty feedback. Examination data was compared for similar examination questions tested in 2008 versus 2009. Results: The majority of students indicated their understanding of various clinical pharmacist roles and care continuity were enhanced, providing a good “head start” to the P2 year. Faculty enjoyed a more productive and meaningful start to the didactic materials in the P2 year. Several areas of the P1 curriculum are targeted for improvement to better prepare students for IPPE2 based on student and preceptor feedback. Implications: Other schools can adopt this self-directed learning concept as a method of facilitating the transition from science-based to clinically based curricula. The independent study component can also be used for health/weather emergency contingency planning.

Assessment of a College-wide Teaching Goal and Related Curricular Methods. Charles R. Phillips, Drake University. Objective: We have implemented a single, commercially available evaluation system for courses and instructors. As a result, the College has established a specific goal for measuring effectiveness of teaching and has undertaken a comprehensive review of the teaching methods and key objectives utilized in the PharmD curriculum. The development, implementation, and the assessment of this college-wide teaching goal, as well as the annual analysis of the teaching methods utilized by our faculty are described. Methods: Using results from course evaluations each year, converted scores for the ‘progress on relevant objectives’ are analyzed and summarized using an SPSS routine. These converted scores allow for benchmarking between faculty, as well as to a national database of educators. Annual progress towards the college teaching goal is tabulated and presented to the faculty each year. Further analysis of the results helps identify areas for faculty development and improvement for the next academic year, as well as any specific areas of the curriculum that need to be addressed by a particular college committee or work group. For example, if we identify a trend in how the curriculum is primarily
taught, such as a move to more student readings, group work or perhaps a focus on critical thinking, those trends can be forwarded to groups such as the College’s curriculum committee for discussion and further research. This aids in maintaining the teaching methods and emphasis areas determined by the College. In addition to the assessment of the teaching goal, further analysis of the data allows for a variety of other curricular and teaching outcomes. Because faculty select the courses objectives they believe are most pertinent to their course and because those are evaluated by the students, we are able to map how well we are meeting the stated objectives. This provides an assessment measure of teaching effectiveness. In addition, we are able to track course requirements and the primary and secondary teaching methods used in our courses. This allows us to review the primary methods used and re-assess the appropriateness of their use. Individual teaching goals can also be established between the faculty member and his/her department chair. To evaluate individual progress, faculty receive a report for each course they teach which shows their ratings on meeting the course objectives, excellence of the course, and excellence of the teacher. Results: The College has collected more than two years worth of aggregate data encompassing over 200 course offerings. To date, we have not met our College teaching goal. This has prompted discussions at several faculty meetings as to what additional data needs to be gathered and what needs to be done to improve. The performance data has led to other action steps including faculty reviewing how their courses are taught and whether or not they are truly emphasizing the objectives they intended; faculty spending more time explaining their course objectives throughout the semester; and introduction of the evaluation system in our orientation for new faculty. We’ve also begun to ask questions about the appropriate balance of teaching methods being employed and the balance of objectives being emphasized. Individual faculty data has been incorporated into annual goal-setting with department chairs. Conclusions: As a result of quantifying a college goal for excellent teaching, discussions have taken place as to what additional data need to be gathered and what improvement measures can be taken for the whole curriculum. The performance data has initiated other actions, including faculty review of how their courses are taught and whether or not they are truly emphasizing the objectives they have attached to their courses. Other discussions resulting from our process revolve around the appropriate balance of teaching methods employed and the balance of objectives being emphasized across the curriculum.